Vol. 900 Number 2

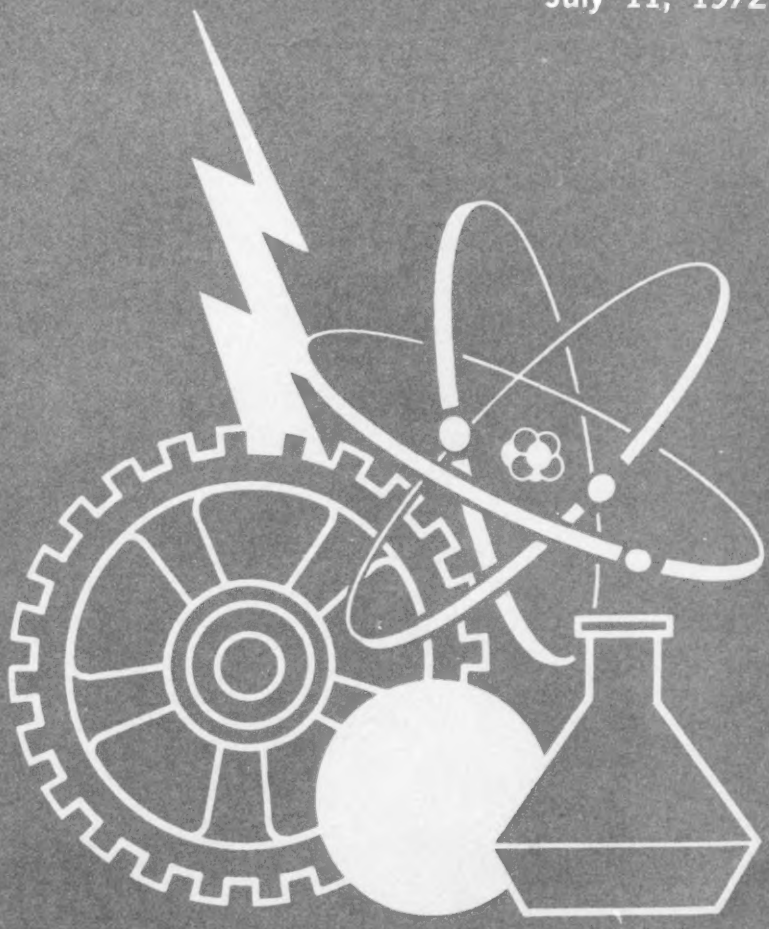
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

July 11, 1972



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

July 11, 1972 Volume 900 Number 2

CONTENTS

	Page
Patent Notices	
Certificates of Correction for the Week of July 11, 1972	410
Erratum	410
Dedications	410
Disclaimers	410
Condition of Patent Applications	412
Reissue Patents Granted	413
Plant Patents Granted	415
Patents Granted	
General and Mechanical	416
Chemical	620
Electrical	713
Design Patents Granted	794
Index of Patentees	PI 1
Indices of Reissues, Plants, and Designs	PI 48
Classification of	
Patents (Including Reissues)	PI 51
Designs	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 55
Designs and Plants	PI 57

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of July 11, 1972

Re. 27,271	3,624,280	3,634,185	3,643,932
Re. 27,314	3,624,616	3,634,212	3,643,973
3,528,395	3,624,971	3,634,365	3,644,076
3,573,511	3,625,223	3,634,436	3,644,160
3,574,226	3,625,700	3,634,440	3,644,179
3,590,224	3,625,882	3,634,485	3,644,264
3,591,093	3,625,945	3,634,491	3,644,360
3,591,195	3,626,022	3,634,687	3,644,381
3,591,416	3,626,033	3,634,882	3,644,431
3,592,222	3,626,242	3,634,919	3,644,466
3,598,324	3,626,400	3,634,923	3,644,496
3,598,346	3,627,053	3,635,011	3,644,622
3,599,682	3,627,092	3,635,237	3,644,624
3,599,968	3,627,551	3,635,426	3,644,940
3,602,050	3,627,575	3,635,836	3,645,144
3,603,527	3,627,579	3,635,860	3,645,243
3,607,341	3,627,682	3,635,972	3,645,251
3,607,489	3,627,688	3,636,006	3,645,643
3,607,589	3,627,697	3,636,010	3,645,681
3,607,742	3,627,698	3,636,052	3,645,705
3,607,784	3,627,766	3,636,103	3,645,781
3,607,828	3,627,831	3,636,165	3,645,842
3,608,067	3,627,921	3,636,194	3,645,845
3,609,325	3,627,989	3,636,338	3,645,861
3,609,933	3,628,038	3,636,431	3,645,930
3,610,343	3,628,196	3,637,660	3,645,956
3,610,553	3,628,231	3,637,726	3,646,015
3,610,664	3,628,305	3,637,746	3,646,022
3,610,822	3,628,363	3,638,305	3,646,240
3,611,137	3,628,500	3,638,316	3,646,380
3,611,145	3,628,985	3,638,498	3,646,429
3,611,995	3,629,220	3,638,534	3,646,521
3,612,004	3,629,397	3,638,595	3,646,552
3,612,397	3,629,420	3,638,657	3,646,645
3,612,819	3,629,681	3,639,080	3,646,690
3,613,006	3,629,842	3,639,082	3,646,811
3,613,199	3,629,972	3,639,088	3,646,937
3,613,549	3,630,005	3,639,243	3,646,987
3,614,200	3,630,165	3,639,327	3,647,481
3,614,363	3,630,194	3,639,357	3,647,540
3,614,616	3,630,369	3,639,446	3,647,597
3,615,659	3,630,499	3,639,572	3,647,760
3,615,877	3,630,501	3,639,838	3,647,772
3,616,111	3,630,662	3,639,859	3,647,864
3,616,159	3,630,716	3,640,000	3,649,624
3,616,367	3,630,756	3,640,044	3,649,675
3,616,373	3,630,762	3,640,182	3,650,410
3,616,740	3,631,065	3,640,208	3,650,734
3,617,246	3,631,108	3,640,387	3,650,748
3,617,843	3,631,162	3,640,682	3,650,773
3,617,862	3,631,396	3,640,750	3,650,848
3,617,891	3,631,427	3,640,933	3,650,956
3,618,782	3,631,456	3,640,984	3,651,059
3,619,236	3,631,533	3,641,122	3,651,121
3,619,545	3,631,706	3,641,248	3,651,157
3,620,497	3,631,935	3,641,420	3,651,186
3,620,577	3,631,981	3,641,457	3,651,240
3,621,096	3,632,377	3,641,546	3,651,317
3,621,313	3,632,448	3,641,601	3,651,531
3,621,384	3,632,470	3,641,833	3,651,671
3,621,906	3,632,546	3,641,930	3,651,768
3,622,169	3,632,585	3,642,114	3,652,463
3,622,989	3,632,658	3,642,526	3,652,674
3,623,371	3,632,998	3,642,529	3,652,742
3,623,392	3,633,009	3,642,559	3,653,165
3,623,543	3,633,012	3,642,659	3,653,247
3,623,583	3,633,340	3,642,800	3,653,335
3,623,603	3,633,457	3,642,861	3,653,358
3,624,112	3,633,476	3,642,918	3,656,103
3,624,214	3,633,745	3,643,844	
3,624,252	3,634,165	3,643,914	

Erratum

All references to Patent Number 3,671,732 to Knut Otto Sassmanshausen, for Lamp, appearing in the OFFICIAL GAZETTE of June 20, 1972, should be deleted as the application should not have been issued.

Dedications

2,847,675.—*Winfred M. Brooks*, West Orange, N.J. SEALING TOOL. Patent dated Aug. 19, 1958. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,902,308.—*Sigurd M. Moberg*, Pompton Plains, N.J. HAND-CLOSABLE SEAL. Patent dated Sept. 1, 1959. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,912,269.—*Sigurd M. Moberg*, Pompton Plains, N.J. HASP SEAL. Patent dated Nov. 10, 1959. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,980,462.—*Sigurd M. Moberg*, Pompton Plains, N.J. HAND-CLOSABLE DUAL SEAL. Patent dated Apr. 18, 1961. dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,197,413.—*Lloyd C. Wingerd*, Berkeley, Calif. PROCESS FOR ATOMIZING ASPHALT. Patent dated July 27, 1965. Dedication filed Mar. 20, 1972, by the assignee, *Chevron Research Company.*

Hereby dedicates the entire term of said patent to the People of the United States of America.

3,631,056.—*Kenneth Butler*, Old Lyme, Conn. BASIC ESTERS OF α-CARBOXY ARYL PENICILLINS. Patent dated Dec. 28, 1971. Dedication filed Mar. 2, 1972, by the assignee, *Pfizer Inc.*

Hereby dedicates to the Public the entire term of the above-identified patent.

Disclaimers

2,934,313.—*Herbert Allen*, Houston, Tex. GATE VALVE AND SEAT ASSEMBLY THEREFOR. Patent dated Apr. 26, 1960. Disclaimer filed Apr. 12, 1972, by the assignee, *Cameron Iron Works, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,343,978.—*Thomas J. Engelbach*, Middletown, N.J. ADHESIVE TRANSFERS. Patent dated Sept. 26, 1967. Disclaimer filed June 2, 1972, by the assignee, *Avery Products Corporation.*

Hereby enters this disclaimer to claims 1–5 and 7 of said patent.

3,399,277.—*William Eugene Davis* and *George Peter Lee*, Indianapolis, Ind. SIGNAL TRANSLATING CIRCUIT. Patent dated Aug. 27, 1968. Disclaimer filed Apr. 10, 1972, by the assignee *Radio Corporation of America.*

Hereby enters this disclaimer to all claims of said patent.

3,463,247.—*Harold T. Klein,* Bellevue, Wash. DRILL STEM BREAKOUT APPARATUS. Patent dated Aug. 26, 1969. Disclaimer filed Nov. 1, 1971, by the assignee, *James S. Robbins and Associates, Inc.*

Hereby enters this disclaimer to claim 14 of said patent.

3,470,118.—*Wolfgang C. Forster,* Middletown, N.Y. FLAME-RESISTANT POLYOL URETHANE FOAM COMPOSITION AND PROCESS OF PRODUCING THE SAME. Patent dated Sept. 30, 1969. Disclaimer filed Feb. 16, 1972, by the assignee, *Reichhold Chemicals, Inc.*

Hereby enters this disclaimer to claims 1 and 8 of said patent.

3,521,550.—*Donald W. Van Doorn* and *William C. Pease III,* Columbus, and *Jack L. Colquett,* Hamilton, Ga., *Jack H. Tinkler,* Phenix City, Ala., and *Ted E. Huguley,* Columbus, Ga. BALE STRAPPING APPARATUS. Patent dated July 21, 1970. Disclaimer filed Dec. 13, 1971, by the assignee, *Lummus Cotton Gin Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 7, 10 and 12 of said patent.

3,553,076.—*Gerrit G. De Haas* and *Charles J. Lang,* Longview, Wash. NON-CATALYTIC PROCESS FOR THE PRODUCTION OF CELLULOSE FROM LIGNOCELLULOSIC MATERIALS USING ACETIC ACID. Patent dated Jan. 5, 1971. Disclaimer filed Apr. 3, 1972, by the assignee, *Weyerhaeuser Company.*

Hereby enters this disclaimer to claims 1, 3, 4, 5, 6, 7, 8, 9, 10, 12 and 13 of said patent.

3,556,889.—*Arne Y. Grahn,* Granby, Conn. VENTILATED RIB FOR GUN BARRELS AND METHOD OF INSTALLATION. Patent dated Jan. 19, 1971. Disclaimer filed Apr. 10, 1972, by the assignee, *The Poly-Choke Company, Incorporated.*

Hereby enters this disclaimer to claim 2 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 27, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-18-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocylic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-21-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	4-05-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	11-02-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-03-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-21-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-23-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-05-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vechicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	6-07-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-12-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	6-10-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	4-20-71

Expiration of patents: The patents within the range of numbers indicated below expire during July 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,712,131 to 2,714,206, inclusive
Plant Patents..... Numbers 1,404 to 1,407, inclusive

REISSUES

JULY 11, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

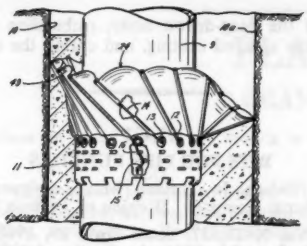
27,425
WELL BORE CLEANER AND CEMENT DISPERSER

Elmer D. Hall, Weatherford, and Jesse E. Hall, Jr., Houston, Tex., assignors to Weatherford Oil Tool Company, Inc., Houston, Tex.

Original No. 3,380,534, dated Apr. 30, 1968, Ser. No. 544,914, Apr. 25, 1966. Application for reissue Apr. 20, 1970, Ser. No. 29,778

Int. Cl. E21b *37/02*

U.S. Cl. 166—173 **6 Claims**



A collar received about a well casing has radially or tangentially projecting ribs or spines with intervening flexible webbing which is inclined and cupped by the flowing fluid to form generally helical, flow-directing passages which cause swirling of the fluid and forceful impinging of the fluid against the well bore for cleaning of the same.

27,426
LOW TEMPERATURE CURING NYLON-EPOXY-PHENOLIC ADHESIVE

James David Lincoln, Costa Mesa, and John F. Wasmund, San Clemente, Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

No Drawing. Original No. 3,496,248, dated Feb. 17, 1970, Ser. No. 573,463, Aug. 19, 1966. Application for reissue Oct. 8, 1970, Ser. No. 79,303

Int. Cl. C08g *45/08*

U.S. Cl. 260—831 **13 Claims**

This patent describes a novel adhesive composition comprising an intimate homogeneous mixture of a nylon which is a polyamide formed from the reaction of hexamethylene diammonium adipate and hexamethylene diammonium sebacate with caprolactam, an epoxy resin which is a polyglycidyl ether of a polyhydric phenol, and a phenolic resin which is at least difunctional in phenolic hydroxyl groups prior to curing, said mixture being in the form of a film of substantially uniform thickness and weight per unit area.

27,427
FEED CHUTE BOOSTER FOR FLEXIBLE STRAP

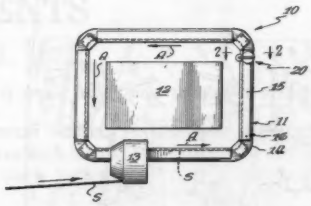
John H. Leslie and Otis E. Hubbard, by Signode Corporation, Chicago, Ill., assignee

Original No. 3,468,241, dated Sept. 23, 1969, Ser. No. 706,298, Feb. 19, 1968. Application for reissue July 24, 1970, Ser. No. 57,993

Int. Cl. B65b *13/04*

U.S. Cl. 100—26 **12 Claims**

Booster mechanisms are disclosed to assist the push-feeding of flexible strap through strap chutes. Thin flexible strap of plastic or steel is fed through longer chutes by locating one or more boosters at spaced locations along the chute to subdivide the strap chute travel path into successive regions, each region being a substantial fraction of the total path. These different booster mechanisms are shown. In one form, a fixed motor drives a traction wheel that is nested within the chute and a cooperating idler wheel is mounted for movement between a feed position confronting the chute and a retracted position that allows clearance for stripping of the strap from the chute. In another form, a motor and a multi-



lobed traction wheel are mounted for joint movement between a feed position wherein the traction wheel is in confronting relation to the chute and a clearance position. The multilobed wheel loads the strap directly against the chute and produces an intermittent feeding action tending to vibrate and shake the strap so as to reduce friction. In a third embodiment, a pair of power-driven traction wheels cooperate to drive the strap, these wheels being of rubber, to permit a certain amount of skidding against the strap when tending to overdrive the strap. The booster traction wheels operate at slightly greater speed than the feed rate of the strapping machine.

27,428
CRYSTAL-CONTROLLED GROUNDED EMITTER OSCILLATOR

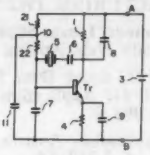
Fumio Watase, Tokyo, Japan, assignor to Tohoku Oki Electric Company

Original No. 3,462,710, dated Aug. 19, 1969, Ser. No. 693,919, Dec. 27, 1967. Application for reissue Jan. 22, 1971, Ser. No. 109,066

Claims priority, application Japan, Jan. 12, 1967 (utility model), 42/3,150

Int. Cl. H03b *5/36*

U.S. Cl. 331—116 R **3 Claims**



In a grounded emitter type transistor oscillator with its operating point set at a low source voltage means is pro-

vided to delay the shift of the operating point toward the saturation region when the source voltage is increased rapidly in a short time whereby to satisfy the condition for initiating oscillations.

27,429

ELECTRICAL CONNECTOR ASSEMBLY AND MOUNTING MEANS THEREFOR

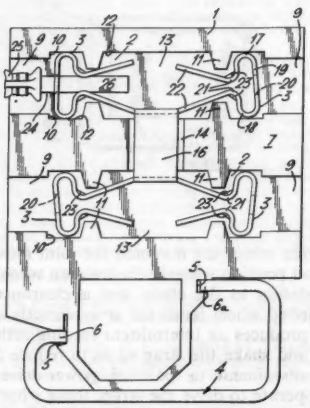
Hermanus Petrus Johannes Gilissen, Vlijmen, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Original No. 3,437,983, dated Apr. 8, 1969, Ser. No. 638,802, May 16, 1967. Application for reissue Mar. 9, 1970, Ser. No. 17,990

Claims priority, application Netherlands, May 20, 1966, 6606948; July 26, 1966, 6610496

Int. Cl. H01r *11/22*

U.S. Cl. 339—198 **11 Claims**



A connector having an insulating housing provided with a passageway in which an electrical contact is disposed. The passageway is provided with camming projections that cooperates with curved portions of the electrical contact so that extraction force on a contact member disposed in electrical engagement with the electrical contact is increased by movement of the curved portions of the electrical contact in engagement with the camming projections. The insulating housing is provided with means for releasably mounting the housing in a support rail.

27,430

PLUMBING FIXTURE AND METHOD OF MANUFACTURING THE SAME

Robert Wimmer, Linzer-Strasse 246, A4600 Wels, Austria

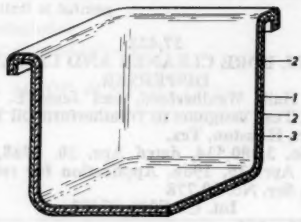
Original No. 3,356,253, dated Dec. 5, 1967, Ser. No. 393,926, Sept. 2, 1964. Application for reissue Aug. 7, 1970, Ser. No. 62,095

Claims priority, application Austria, Sept. 6, 1963, A 7,179/63

Int. Cl. B65d *25/14*

U.S. Cl. 220—64 **13 Claims**

A bath tub or similar plumbing fixture consisting of a polymethacrylate liner and an outer coating of glass-fiber reinforced cured polyester resin is produced by deep drawing polymethacrylate sheeting into the shape of the liner, spraying a coating of polyester resin on the outer



surface of the deep-drawn body, embedding glass fiber fabric in the sprayed coating, and curing the coating.

27,431

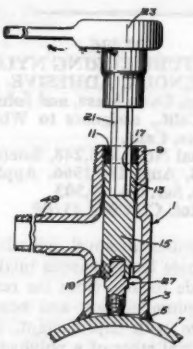
BITS FOR PIPE PUNCHES

Anker J. Nielsen, Jr., Holden, Mass., assignor to M. B. Skinner Company, Division of Textron Inc.

Original No. 3,411,527, dated Nov. 19, 1968, Ser. No. 560,209, June 24, 1966. Application for reissue Dec. 2, 1970, Ser. No. 94,638

Int. Cl. B23b *41/08*; F16e *41/04*

U.S. Cl. 137—318 **32 Claims**

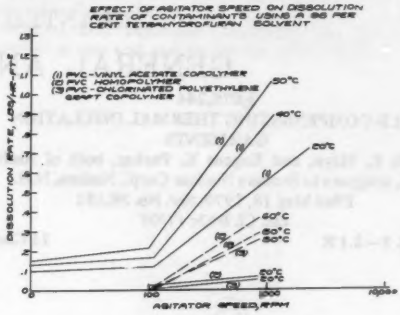


A punch T welded to a gas main. Screw-threadedly engaged with the inside of the T is an elongated punching bit having a socket portion at one end for receiving an extension shaft of a ratchet wrench which rotates and feeds the bit into the gas main. The punching bit forms the hole in the gas main by means of a hollow punching end formed as a cam with two lobes on the end opposite the socket portion. Axially spaced from the punching end is a second cam of larger diameter also having two lobes for enlarging the punched hole by a swaging action. A beveled portion of larger diameter than the second cam and spaced axially further in from the punching end than the second cam serves as a valve for shutting off the flow of the gas via the T. The punching bit forms the hole

and enlarges it by a punching and swaging action as opposed to a cutting-by-chip-removal action. The thus punched coupon or slug works its way into the bore of the hollow punch end by cold flow of the metal and is packed so tightly in the bore that it is retained with certainty.

27,432
SOLVENT CLEANING SYSTEM
Archie P. Torrenzano, Springfield, Mass., and Richard T. Pincince, Warwick, R.I., assignors to Monsanto Company, St. Louis, Mo.
Original No. 3,475,218, dated Oct. 28, 1969, Ser. No. 506,818, Nov. 8, 1965. Application for reissue July 2, 1970, Ser. No. 52,147
Int. Cl. B08b *3/08, 7/00, 9/08*
U.S. Cl. 134—12 **2 Claims**

Process for removing polymeric materials from processing equipment involving contacting such materials with a tetrahydrofuran solvent while agitating so as to



effect solution of the polymeric materials in the solvent.

PLANT PATENTS

GRANTED JULY 11, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,231
CHRYSANTHEMUM PLANT
Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Nov. 12, 1970, Ser. No. 89,151
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct variety of chrysanthemum characterized particularly as to uniqueness when compared with the parent cultivar Yellow Mandalay by its clear yellow color, its resistance to bronzing at low temperature finishes, its faster and more uniform response during high temperature periods, and its tendency to develop less longitudinal petal roll during low light, low temperature periods.

3,232
CHRYSANTHEMUM PLANT
Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Nov. 12, 1970, Ser. No. 89,152
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness as compared to the parent cultivar Mandalay by its darker red bronze color.

3,233
CHRYSANTHEMUM PLANT
Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Nov. 12, 1970, Ser. No. 89,153
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared to the parent cultivar Mandalay by a deeper red flower color, three days later in response during high temperature periods, and a somewhat more incurved and ¼" smaller flower.

3,234
ROSE PLANT
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Jan. 6, 1971, Ser. No. 104,525
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plants of the hybrid tea class substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a bud of Tyrian Purple opening to a flower of Persian Rose; a very strong fragrance of the "tea" type; and an unusual abundance of blooms.

3,235
ROSE PLANT
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Jan. 7, 1971, Ser. No. 104,820
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—23 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its similarity to Bridal Pink in plant habit and growth and its novel color of near white with a very faint pink overcast.

PATENTS

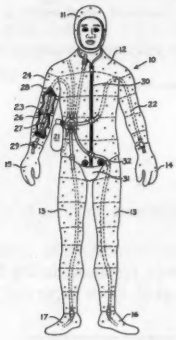
GRANTED JULY 11, 1972

GENERAL AND MECHANICAL

3,675,244
SELF-COMPENSATING THERMAL INSULATION GARMENTS

Kenneth E. Mayo, and Eugene K. Parker, both of Nashua, N.H., assignors to Sanders Nuclear Corp., Nashua, N.H.

Filed May 18, 1970, Ser. No. 38,151
Int. Cl. B63c *11/08*
U.S. Cl. 2—2.1 R **11 Claims**



Self-compensating thermal insulating garments are found useful for protecting the body of a user from hostile temperature environments. The garments each comprise a plurality of compartments with each compartment having a heat insulating core of a flexible porous material. Outer and inner continuous resilient sheets span the compartments and preferably seal the cores against unwanted passage of gas and liquid in conjunction with barrier means for each compartment which form gas and water barriers. Preferably tubular means pass into and through the cores to deliver a gas at a predetermined pressure to maintain each of the compartments at predetermined internal pressures preventing compression of the compartments due to pressure differentials.

3,675,245
NOVELTY BATHING GARMENT

Harold E. Follett, 100 Reamer Avenue, Wilmington, Del.

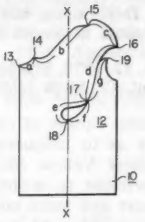
Filed June 25, 1970, Ser. No. 49,781
Int. Cl. A41d *7/00*
U.S. Cl. 2—67 **7 Claims**

A novelty bathing garment is provided which gives a bather the appearance of wearing a sponge from the sea. The garment is composed of an outer layer of natural or artificial sponge and an inner layer next to the body of a bather of a fabric liner affixed to the inner surface of the sponge outer layer. The sponge outer laver is of a thickness such that a portion of the pores in the sponge layer extends nearly or completely through the layer making the inner fabric liner visible or nearly visible therethrough and the remaining pores giving the garment when worn by the bather the appearance the bather is wearing a sponge. Besides the natural color of sponge, the sponge outer layer can be of any color and/or of varying colors to give many decorative effects.

3,675,246
BLANK FOR FORMING A GARMENT

Mitsuru Ito, No. 1-456, Nishi-okubo, Shinjuku-ku, Tokyo, Japan

Filed Dec. 30, 1969, Ser. No. 889,131
Claims priority, application Japan, April 12, 1969, 44/27990; Aug. 27, 1969, 44/67198
Int. Cl. A41b *1/08*
U.S. Cl. 2—115 **1 Claim**



A construction of garment with front or breast portion and sleeve portions, the garment being obtained from a flattened tubular blank, with a minimum number of cutting operations, wherein proper balance as well as adequate fullness is assured at the breast region when joining one side of each of the sleeve portions to the associated sides of the front portion, thereby providing a bust cup in the finished garment.

3,675,247
METHOD FOR FABRICATING PANTY HOSE

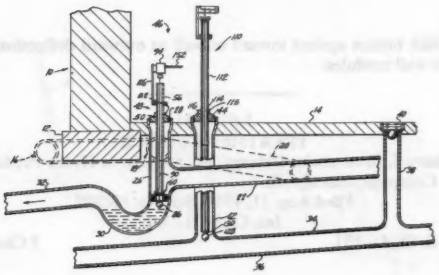
John O. Ferrell, Randolph, N.C., assignor to Tights, Inc.

Filed Dec. 16, 1968, Ser. No. 784,017
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 R **13 Claims**

A method for fabricating combination knitted garments such as panty hose and the like wherein a pair of tubular members are shaped and connected in a continuous operation. The

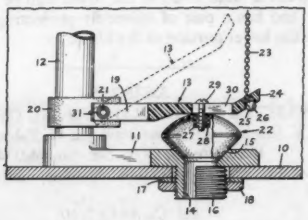
stockings of the pair are aligned in a contiguous relationship each with the other and simultaneously cut and sewn continuously along a predetermined path of travel, this cutting and sewing forming a U-shaped seam intermediate a single enlarged welt which defines the waist and crotch portion of a panty. Alternatively, a separate crotch fabric segment may be secured between an enlarged welt portion of each of the stocking members of the pair.

3,675,248
FLOOD CONTROL SYSTEM
Emil A. Gaj, 741 Charlesworth, Dearborn Heights, Mich.
Filed June 1, 1970, Ser. No. 41,907
Int. Cl. A47k *17/00*; E03d *11/00*
U.S. Cl. 4—1 **13 Claims**

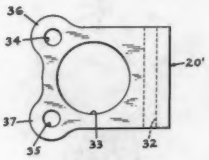


A flood control system for preventing the flooding of a house basement, and including a valve disposed within the seepage drain pipe, which upon actuation closes off the seepage drain pipe preventing water from backing up from the main sewer line through the drainage pipe and into the seepage drain tile, which is disposed adjacent the house foundation. Appropriate sensing means is preferably disposed within the sanitary drain pipe at a level below the drain tile for sensing water backed up therein from the main sewer line to actuate the valve and to close the seepage drain pipe. The sensing means may also be connected to a basement toilet for closing off the toilet when the water backs up, preventing the water from backing up through the toilet into the basement.

3,675,249
FLUSH VALVE ASSEMBLY
William J. Breen, 456 Lewis Place, Mineola, N.Y.
Filed June 11, 1970, Ser. No. 45,370
Int. Cl. E03d *1/34*
U.S. Cl. 4—57 P **2 Claims**

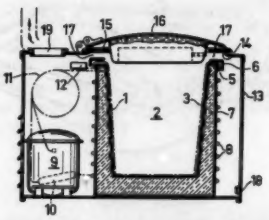


The present invention comprises a unitary flush valve assembly for use in the flush tanks of toilets and the like which combines effective valve sealing with low cost of manufacture and ease of installation. The valve assembly consists of a horizontal arm adjustably supporting the valve closure member at one end and having the other end bifurcated to



establish a hinged connection with a supporting member mounted on the overflow pipe. Means are also provided to permit operation in tanks having canted valve seats, as well as means for adapting the supporting member to accommodate various sizes of overflow pipes.

3,675,250
CLOSET MEANS
Bigge Bengtsson, Falkenberg, Sweden, assignor to TeBe-Elprodukter AB, Huskvarna, Sweden
Filed Feb. 9, 1971, Ser. No. 113,825
Claims priority, application Sweden, Feb. 10, 1970, 1662/70
Int. Cl. A47k *11/02*
U.S. Cl. 4—111 **6 Claims**

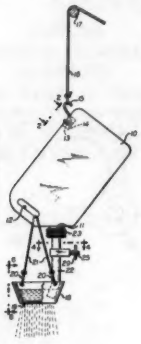


A closet means comprises a chair having an upwards pivotable seat ring and a closure for shutting the chair. Immediately below said ring there is provided a well-like chamber, the wall of which is thermally insulated and connected to a cooling system in such a way, that the wall of the chamber may be cooled down to about −15° C and that during such cooling heat is uniformly transferred to the seat ring, which is insulated from said wall by means of a ring of plastic or the like.

3,675,251
PORTABLE BATHING SHOWER
Harold Ruscher, Jr., R.D. 1, Box 224, Katonah, N.Y.
Filed Jan. 28, 1971, Ser. No. 110,429
Int. Cl. A47k *3/22*; E03b *11/00*
U.S. Cl. 4—151 **18 Claims**

A container having an outlet opening in its upper end is suspended in an inverted position, and communicates with a shower head composed of a container having a perforated bottom, so that liquid within the container is discharged intermit-

tently to the shower head under control of Torricellian vacuum developed in the container, and the liquid is



discharged constantly from the shower head as a shower of the liquid. The device is well suited for use by campers.

3,675,252

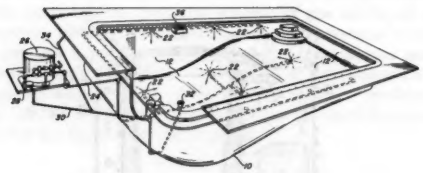
POP-UP HEAD FOR WATER JET-POOL CLEANING SYSTEM

George J. Ghiz, 221 E. Hayward, Phoenix, Ariz.

Continuation-in-part of Ser. No. 666,595, Sept. 11, 1967, Pat. No. 3,521,304. This application May 18, 1970, Ser. No. 38,468

Int. Cl. E04h *3/16*; B08b *3/02*, *9/00*

U.S. Cl. 4—172.17 1 Claim



A swimming pool cleaning system comprising a pool structure having inner surfaces, and a plurality of rotating jet delivery means adapted to deliver jet streams of water substantially parallel to and in adjacent relation with the inner surfaces of the pool for washing and cleaning said inner surfaces; said means also provided with jet nozzles disposed at an acute angle to the rotating axis of the rotary jet delivery means to maintain deleterious matter in suspension in the water so that it may be carried away by the pool circulation system.

3,675,253

SWIMMING POOL CONSTRUCTION

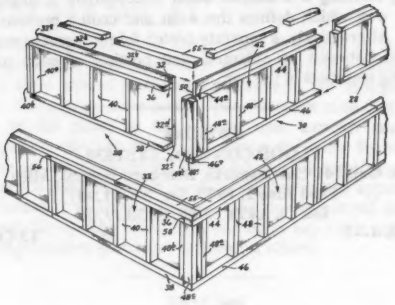
Zarul I. Danzker, 1930 S.W. Orchid Place, Portland, Oreg.

Filed Jan. 4, 1971, Ser. No. 103,535

Int. Cl. E04h *3/16*, *3/18*

U.S. Cl. 4—172.19 10 Claims

A swimming pool constructed of wall modules disposed end-to-end to form the wall bounding the perimeter of the pool. The wall modules have interfitting stiffener structure functioning to make rigid the completed pool wall. Where the modules meet at a joint, bracing structure may be provided



which braces against inward as well as outward deflection of the wall modules.

3,675,254

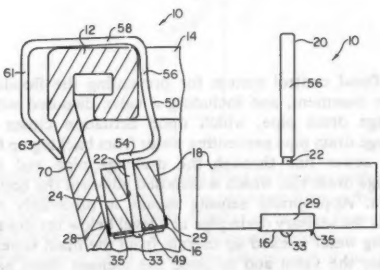
TREATMENT DEVICE

Henry J. Brownstein, Chicago, Ill., assignor to Hysan Products Company, Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,382

Int. Cl. A611 *9/04*

U.S. Cl. 4—231 5 Claims



A treatment device is adapted to be supported from a supporting surface, such as a rim of a toilet bowl or other object to be treated, and includes a hook-shaped arm which clips onto the top edge of the toilet bowl rim and which has a base portion secured to the upper end of an elongated member extending downwardly through a central opening in a block of material composed of deodorizing, antiseptic, insecticide or other material and which is disposed within the toilet bowl when the arm is clipped onto the bowl and which is consumed upon exposure to ambient conditions. A channel-shaped supporting plate is snap fitted at the lower end of the elongated member and has a pair of upwardly projecting side walls to embrace the lower portion of the block.

3,675,255

BATH LITTER FOR THERAPEUTICAL TREATMENT

Hans A. V. Johansson, Treharadsvagen 45, Eslov, Sweden

Filed June 8, 1970, Ser. No. 44,074

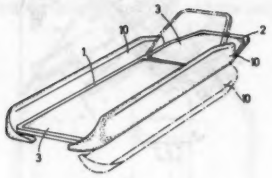
Claims priority, application Sweden, June 11, 1969, 8281/69

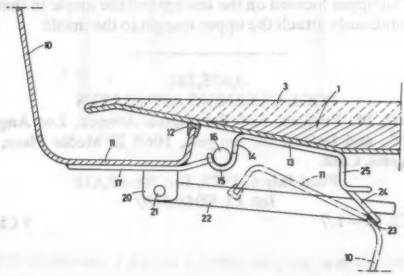
Int. Cl. A61g *7/10*

U.S. Cl. 5—82 8 Claims

A bath litter for therapeutical treatment of persons has a resting support with a pivotally mounted head portion which may be secured in different angular positions relative to the

remainder of the resting support for supporting the upper part and head of a person's body, and at least one side piece extending lengthwise of the resting support which may be





pivoted from an idle position below the level of the resting support about a longitudinal axis to an active position above the resting support.

3,675,256

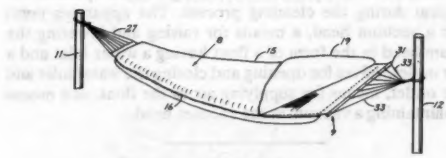
SUSPENDIBLE SLEEPING COCOON

Robert A. Tallarico, 948 East 115th Place, Denver, Colo., and Don L. Goff, 616 South Sheild Street, Fort Collins, Colo.

Filed June 1, 1970, Ser. No. 41,915

Int. Cl. A45f 3/22

U.S. Cl. 5—120 **10 Claims**



A combination sleeping bag and hammock has the body portion of the hammock encompassed by the sleeping bag with suspension lines attached to and projecting from the ends of the body portion for the suspended support thereof. A rectangular-type sleeping bag has the body portion of the hammock generally conforming in shape to the inner bottom section of the bag and is secured thereto and a mummy-type sleeping bag has a generally pod-shaped body portion attached at each end to a suspension line within the bag with the attached lines extending through opposite ends of the bag.

3,675,257

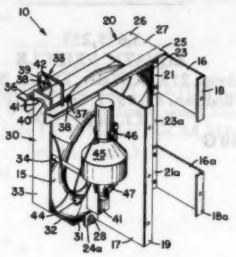
QUICK-RELEASE STORAGE OF A LIFE RING

Bernard F. Haglund, San Lorenzo, and Robert M. Salvarezza, Hillsborough, both of Calif., assignors to Coast Marine & Industrial Supply Inc., San Francisco, Calif.

Filed April 8, 1971, Ser. No. 132,272

Int. Cl. B63c 9/22

U.S. Cl. 9—14 **9 Claims**



A quick-release device for storing a ring buoy. Spacing and support means secure the device to a bulkhead extending transversely to the fore-and-aft line of a ship. A stationary frame supported by the spacing and support means provides a vertical end wall, a horizontal bottom portion having pivot means spaced from the end wall, and a horizontal upper portion. The ring buoy rests against the end wall and is held there normally by a swingable ramp pivoted to the pivot means with its center of gravity well beyond the pivot means on the opposite side thereof from the end wall. This ramp has a short bottom wall portion, an inclined portion, and an end portion, which during stowage is substantially vertical, and when it is vertical, it snugly holds the ring buoy, with the ring buoy resting on the ramp's bottom and inclined portions and against the end portion. The ramp means also has guide means for retaining the ring buoy in proper position so that it will not fall to one side. Latch and release means supported by said horizontal upper portion, holds the upper edge of the ramp when its end portion is in a vertical position. A simple upward pull releases the edge of the ramp, whereby it seeks its natural center of gravity and swings out around the pivot means and provides a ramp pathway projecting the ring buoy out and away from a vertical drop and causing it to describe a trajectory that frees it from the ship.

3,675,258

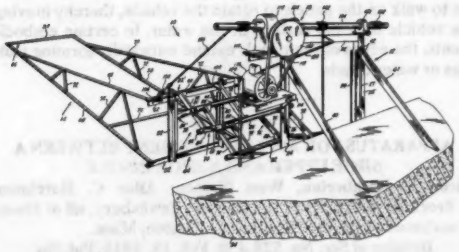
BOAT HOIST

Bradley M. Osmundson, 400 Broadway, Webster City, Iowa

Filed Oct. 22, 1970, Ser. No. 83,265

Int. Cl. B63b 23/02

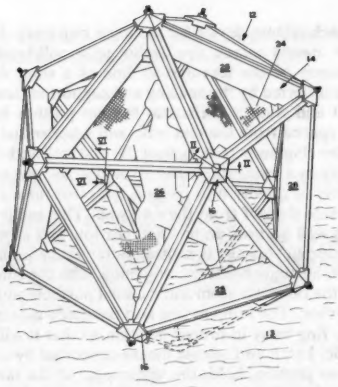
U.S. Cl. 9—34 **8 Claims**



A boat hoist for launching a boat and for removing it from the water. This hoist includes a scissor-type extensible and

retractable arm assembly connected at one end to a support platform for a boat. The entire supporting structure for the hoist is mounted upon the shore and the other end of the scissor assembly is operatively secured to the shore mounted support. The extension of the scissor assembly projects the boat platform over the water and to a prescribed depth therein and the retraction of the arms elevates the boat platform from the water towards the shore support where the boat can be maintained in a docked position free of the water.

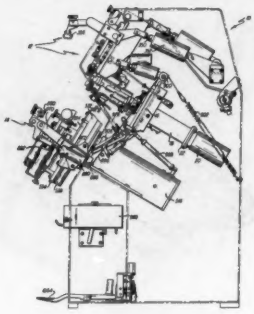
3,675,259
AQUATIC VEHICLE
David W. Gilchrist, 215 W. Water, Elmira, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,348
Int. Cl. A63c *15/04*
U.S. Cl. 9—310 G **21 Claims**



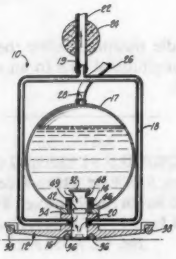
An aquatic vehicle for use by human beings for movement on the surface of the water. The vehicle is spherical in shape and formed from a plurality of buoyant regularly shaped panels which are joined together at the edges thereof. The panels are transparent to permit visibility from the vehicle and have means to permit flow of air into the vehicle. The panels are firm and weight supporting to permit the user of the vehicle to walk on the panels to rotate the vehicle, thereby moving the vehicle over the surface of the water. In certain embodiments, the edges of the panels extend outwardly forming paddles or water treads.

3,675,260
APPARATUS FOR APPLYING CEMENT BETWEEN A SHOE UPPER AND A SHOE INSOLE
Jacob S. Kamborian, West Newton; Allen C. Harriman, Brockton, and Karl F. Vornberger, Tewksbury, all of Mass., assignors to Jacob S. Kamborian, Boston, Mass.
Division of Ser. No. 528,430, Feb. 18, 1916, Pat. No. 3,422,474. This application Aug. 30, 1967, Ser. No. 664,475
Int. Cl. A43d *21/00*
U.S. Cl. 12—12 **31 Claims**

There is disclosed herein a cement lasting machine having mechanism for applying cement to the periphery of an insole that is mounted to the bottom of a last and for wiping the margin of an upper located on the last against the insole to thereby cementatiously attach the upper margin to the insole.



3,675,261
POOL CLEANING APPARATUS
Kenneth M. Burgess, 624 Barrington Avenue, Los Angeles, Calif., and Doland M. Burgess, 1060 El Medio Place, Los Angeles, Calif.
Filed July 6, 1970, Ser. No. 52,618
Int. Cl. E04h *3/20*
U.S. Cl. 15—1.7 **9 Claims**

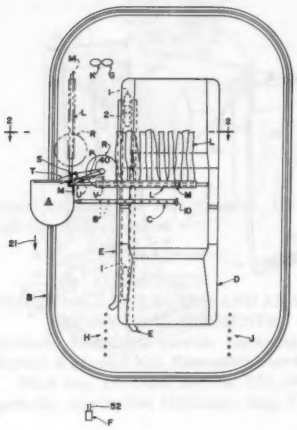


A pool cleaning apparatus for automatically cleaning swimming pools and the like which requires no operator supervision during the cleaning process. The apparatus comprises a vacuum head, a means for raising and lowering the vacuum head in the form of a float having a water inlet and a water outlet, valves for opening and closing the water inlet and water outlet, means for supplying air to the float, and means for maintaining a vacuum at the vacuum head.

3,675,262
AUTOMATIC VEHICLE WASHING APPARATUS WITH BRUSH FOR CLEANING THE VEHICLE SIDES
Frank A. Mello, 702 McLaughlin St., Richmond, Calif.
Filed June 15, 1970, Ser. No. 46,011
Int. Cl. B60s *3/06*
U.S. Cl. 15—4 **6 Claims**

An automatic vehicle washing apparatus that includes a mobile carriage that travels around an endless track that encircles the stationary vehicle during the washing process. The carriage supports a spray arm that directs a heated liquid detergent under pressure and onto the exterior surfaces of the vehicle for cleaning it while the carriage makes one or more trips around the vehicle. The carrier makes an additional one or

more trips around the vehicle with the same spray arm now delivering cold rinse water under pressure against the vehicle for rinsing off the detergent liquid. The carriage also swingably supports an auxiliary arm that carries a heavy fabric and this auxiliary arm is automatically swung into a position for placing the heavy fabric immediately in back of the spray arm during the spraying of the liquid detergent onto the vehicle so that it will be dragged over the vehicle and aid in removing dirt therefrom. I mount a brush-carrying arm on the auxiliary arm and provide novel means for swinging both the auxiliary arm and brush-carrying arm into operative position during the time the detergent liquid is sprayed onto the vehicle and for swinging the same two arms into inoperative position during the rinsing cycle. The brush is rotated and will aid in cleaning the sides, front and rear of the vehicle when the brush-supporting arm is in operative position.



3,675,263

BRUSHES FOR CLEANING GLASSES AND OTHER DRINKING VESSELS

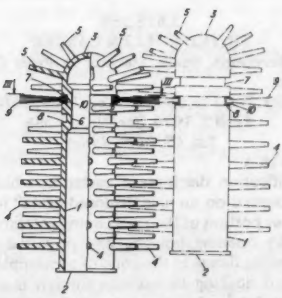
Charles Edward Durham, London, England, assignor to Clenaglass Electric Washer Limited, London, England

Filed April 6, 1971, Ser. No. 131,651

Claims priority, application Great Britain, April 6, 1970, 16,128/70

Int. Cl. A47l *15/38*; B67c *1/08*

U.S. Cl. 15—76 **9 Claims**



One kind of device for cleaning glasses, tankards and other drinking vessels comprises a central brush having an upright core made of rubber or rubber-like material with integrally formed radially projecting fingers and a group of similar brushes arranged around the central brush, all of the brushes preferably being rotated by a driving mechanism, although they may be stationary. Each of the brushes is provided, in addition to the radially projecting fingers, with a ring of closely spaced radially projecting bristles, the rings of bristles meshing with each other and preferably having their inner ends fixed to a rigid ring which is detachably fixed to the core of rubber or rubber-like material.

3,675,264

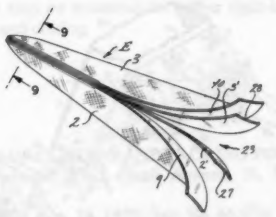
DENTIFRICE APPLICATOR

Duane L. Storandt, 8744 Rankin, Brentwood, Mo.

Filed July 13, 1970, Ser. No. 54,319

Int. Cl. A46b *5/04*

U.S. Cl. 15—104.94 **4 Claims**



A dentifrice applicator incorporating a pair of panels connected along their top margins and a portion of their side margins for developing a finger pouch and hand grip extensions. Each panel is constructed of laminated material having an inner moisture impervious layer and an outer moisture absorptive layer; there being a dentifrice agent applied to the outer layer in the zone of said finger pouch. In usage, a user will insert an index finger within the finger pouch, grasp a hand grip extension and then insert the applicator within his mouth for cleaning his teeth, massaging his gums, and refreshing his mouth generally.

3,675,265

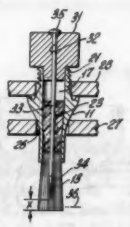
BRUSH CONSTRUCTION

William James Landen, Chesire, and Gunnar Lundquist, Kensington, both of Conn., assignors to The International Silver Company, Meridan, Conn.

Division of Ser. No. 692,416, Dec. 21, 1967. This application Dec. 12, 1969, Ser. No. 884,723

Int. Cl. A46b *3/02, 11/00*

U.S. Cl. 15—193 **5 Claims**



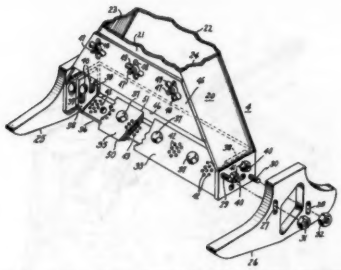
The invention contemplates a brush in which a bundle of natural brush bristles is secured to a tubular retaining ferrule having a bore open at both ends. The root ends of the bristles are assembled within the bore, with the tip ends projecting outwardly as the applicator end of the brush. A guided pin is

inserted on the central axis of the bundle to radially outwardly further compact the bristles in the bore, and to serve a molding function as a thermosetting resin is cured to hardness; the root ends are thereby bonded to each other and to the ferrule, and a smooth central passage is defined for pomade supply.

3,675,266
VACUUM TYPE DEBRIS COLLECTOR WITH SCRAPER BLADE

Gregory J. Murray, and Fred K. Tarrant, both of Saratoga Springs, N.Y., assignors to Tarrant Manufacturing Company

Filed Dec. 8, 1970, Ser. No. 96,144
Int. Cl. E01h 1/08
U.S. Cl. 15—340 **13 Claims**

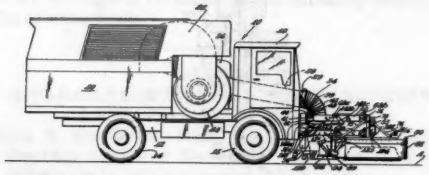


A cleaning attachment to the suction hose or intake conduit of a debris collector includes a blade for scraping the ground and lifting debris into the suction path, the blade being adjustably supported in a shroud in a position to form a path for high velocity air at both the front and rear of the shroud to assist in conveying debris to the suction hose or conduit and a debris receiver. The cleaning attachment includes ground contacting members to facilitate movement over a surface to be cleaned and is pivotally mounted on a vehicle so that it can be raised to avoid obstacles and for rapid transit.

3,675,267
POWER VACUUM TRUCK

Vernon L. Klawitter, 1300 West Bartlett Road, Wichita, Kans.

Filed Dec. 15, 1969, Ser. No. 884,788
Int. Cl. A47l 5/00
U.S. Cl. 15—340 **14 Claims**

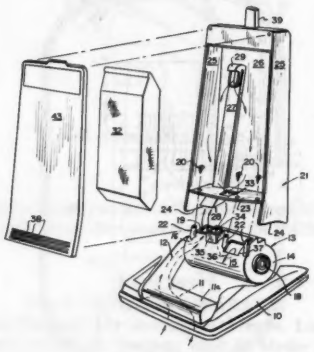


A mobile power vacuum truck includes a vacuum producing means having a pressure outlet to a collection box and a suction inlet communicating with a hood of a generally self-contained vacuum pick-up head assembly attached to the forward end of a street sweeper vehicle and movable laterally of the direction of travel of the vehicle. The sweeper pick-up head assembly includes a pair of counterrotating brooms tangentially intermeshing whereby sweepings are partially broken up and directed to a debris pick-up area centrally located behind and rearwardly of the brooms. A suction hood or enclosure overlies the brooms and has depending sides at least rearwardly and forwardly of the brooms. The rearward side converges to the opening of the vacuum suction passageway whereby the sweepings are conveyed to a collection box as the apparatus moves along.

3,675,268
VACUUM CLEANER

Erwin E. Nordeen, St. Paul, Minn., assignor to Whirlpool Corporation

Filed May 19, 1970, Ser. No. 38,803
Int. Cl. A47l 9/22
U.S. Cl. 15—350 **3 Claims**



A vacuum cleaner having a nozzle, a motor-fan suction unit pivotably mounted on the nozzle about a horizontal axis, a dust bag enclosing housing of rigid construction mounted on the suction unit to be pivoted therewith and a rigid air passage conduit in the housing extending to the upper portion thereof for suspending a filter bag in the housing together with air inlet passages into the conduit and air outlet passages from the housing both of which are enclosed by the attaching of the housing to the suction unit.

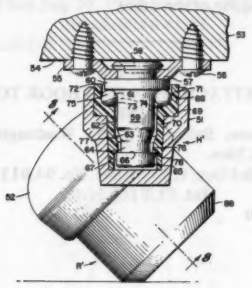
3,675,269
TILTED ROLLER CASTER

Jose Closa, Barcelona, Spain, assignor to Super Caster Corp., Miami, Fla.

Division of Ser. No. 740,658, June 27, 1968. This application April 2, 1970, Ser. No. 29,356
Int. Cl. B60b 33/08
U.S. Cl. 16—18 A **1 Claim**

This specification discloses a caster in which a roller is rotatably mounted on an axis disposed at 45° to the vertical with the upper portion of the roller being rotatably received in a downwardly opening housing and provided with an outwardly extending flange in the zone of overlapping portions of the roller and housing to exclude foreign matter from the latter and maintain frictional resistance to rotation at a minimum. The bottom wall of the roller is integrally joined to the cylindrical wall thereof by a bevelled or rounded structure that includes an annular groove extending upwardly with the groove defining a flexible rolling wall that will give under pres-

sure. The bottom together with the inner wall of the groove are supported by a spider comprising six webs that are integrally joined to a central hub member, the bottom, and grooved wall structure aforesaid.



3,675,270

CLOSING DEVICE FOR DOORS AND ANALOGOUS STRUCTURAL ELEMENTS

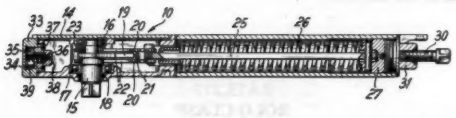
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Firma Dorken & Mankel KG, Ennepetal-Voerde, Germany

Filed Aug. 15, 1969, Ser. No. 850,494

Claims priority, application Germany, Aug. 17, 1968, P 17 84 546.4

Int. Cl. E05f 3/10, 3/04; F05f 3/14

U.S. Cl. 16—53 **3 Claims**



An elongated housing accommodates a slide means for longitudinal sliding movement in predetermined direction between a rest position and a working position. Biasing means permanently urges the slide means to its rest position. Connecting means connects the slide means with a structural element capable of performing movements between a closed and an open position to cause sliding movement of the sliding means towards its working position in response to movement of the structural element from the closed position. Braking means is operative for braking the movement of the slide means in response to the latter approaching its working position.

3,675,271

REVERSIBLE HINGE FOR REFRIGERATOR

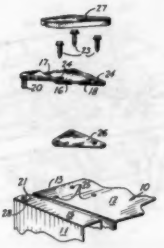
Charles G. Fellwock, and Donald L. Tuley, both of Evansville, Ind., assignors to Whirlpool Corporation

Filed Oct. 30, 1969, Ser. No. 872,539

Int. Cl. E05d 7/02

U.S. Cl. 16—170 **9 Claims**

A top hinge structure for mounting a door on a cabinet such as a refrigerator cabinet so that with the same hinge plate and the same receiving means hingedly connecting the plate to the door the door may be mounted for either right-hand or left-hand opening and closing.



3,675,272

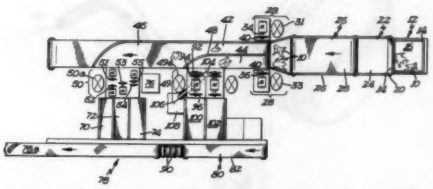
METHOD OF CUTTING AND PACKING POULTRY

Henry Neil Schacht, 2745 Quail Avenue, N, Minneapolis, Minn.

Filed Aug. 26, 1970, Ser. No. 66,976

Int. Cl. A22c 21/00

U.S. Cl. 17—52 **6 Claims**



Chickens which have been eviscerated and chilled are transferred to a first handling station where they are cut in half transversely. They are then segregated into front and rear halves and transported via segregated channels to a second and a third handling station. The wings are removed at the second handling station and the legs are removed at the third handling station. The parts are then packed in plastic or fiber trays.

3,675,273

FISH BUTCHERING APPARATUS

Frank V. Vidjak, Long Beach, Calif., assignor to Star-Kist Foods, Inc., Terminal Island, Calif.

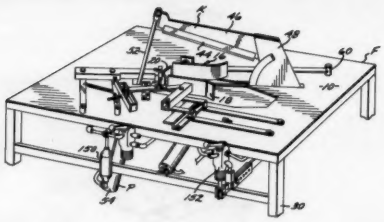
Filed Nov. 27, 1970, Ser. No. 93,066

Int. Cl. A22c 25/14

U.S. Cl. 17—61 **10 Claims**

Fish butchering apparatus for separating a fish into a main loin section and a lower head and belly section. The apparatus includes a power-operated vertically movable knife which is urged towards and away from a horizontal table upon which a

fish is positioned. Means on the table cooperate to position a fish so that the knife will cut downwardly through such fish

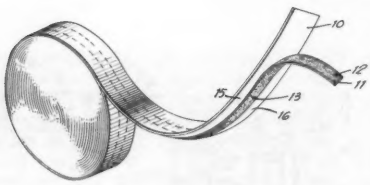


along a line extending approximately from the center of the eye to the vent regardless of the size of the fish.

3,675,274
NAPKIN

Alan J. Fried, 1359 Sussex Road, Teaneck, N.J., and Louis Fried, 280 Prospect Avenue, Hackensack, N.J.

Continuation-in-part of Ser. No. 46,858, June 17, 1970, abandoned. This application June 25, 1971, Ser. No. 156,882
Int. Cl. A45f 5/04
U.S. Cl. 24—67 R **4 Claims**

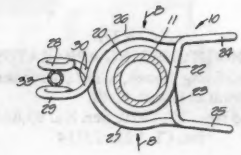


A roll or the like of tape adapted to be secured to a napkin to suspend or adhere same to its user, the tape having pre-existing pressure sensitive adhesive on both sides thereof and having a release strip (10) on one side thereof.

3,675,275
DOUBLE ACTION SPRING CLIP

Dennis Arblaster, 34081 La Serena, Dana Point, Calif.

Filed Jan. 29, 1971, Ser. No. 111,042
Int. Cl. A44b 21/00
U.S. Cl. 24—81 HS **19 Claims**

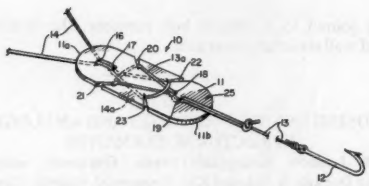


A double action, highly versatile clip formed from spring stock and including a pair of jaws and additionally, contracting coil-like clamping means which contracts against the support passing therethrough to anchor the clip firmly in any desired operating position thereon. The jaws and coil clamps are operable selectively at the user's option without releasing the clamping position of the other.

3,675,276
DEVICE FOR ATTACHING A FISH HOOK TO A FISHING LINE

Richard W. Nuse, Suite "O" 457 Washington, S.E., Albuquerque, N. Mex.

Filed Dec. 1, 1970, Ser. No. 94,013
Int. Cl. F16g 11/00
U.S. Cl. 24—130 **1 Claim**

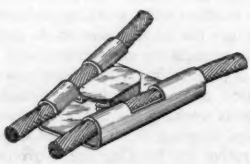


A device for fastening a snelled fish hook to a primary fishing line comprising a flat member in which are formed two pairs of slots and two pairs of holes. The slots of each pair converge toward each other and toward the center of the member from the longitudinal sides thereof and the holes are disposed one pair on each side of the center and along the longitudinal axis of the member.

3,675,277
BOLO CLASP

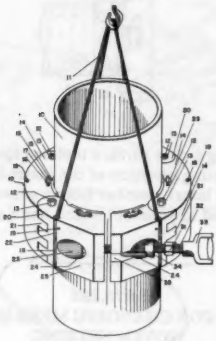
John W. Day, 551 South Memorial Drive, Tulsa, Okla.

Filed Oct. 11, 1966, Ser. No. 585,820
Int. Cl. A41d 25/14
U.S. Cl. 24—49 S **6 Claims**



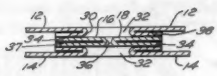
A bolo clasp comprising a base 3, means 9 carried by the base defining a pair of recesses that open toward the base, a clamping member 21 disposed between the base and each recess, and means 29 yieldably urging the clamping member away from the base and toward the recesses, said yieldable means comprising a coil compression spring disposed between the base and the clamping member.

3,675,278
COMBINATION ELEVATOR AND SPIDER
Thurman O. Powell, Box 453, Cross Plains, Callahan County, Tex.
Filed July 30, 1970, Ser. No. 59,558
Int. Cl. B21d 41/02
U.S. Cl. 24—249 DP 1 Claim



Apparatus encircles, grips and holds plain end well casing being lowered into bore hole, or removed therefrom.

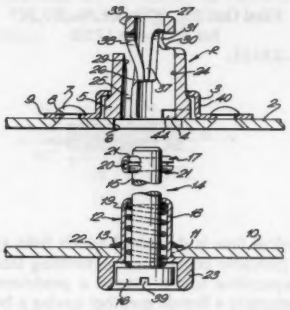
3,675,279
PIPED BUTTONHOLE CONSTRUCTION
James R. Moden, Barrington, R.I., assignor to AMH Corporation, Barrington, R.I.
Filed April 5, 1971, Ser. No. 130,921
Int. Cl. A44b 17/00
U.S. Cl. 24—202 7 Claims



A piped buttonhole construction comprising upper and lower layers having aligned openings therein and further having intermediate layers sandwiched therebetween, said intermediate layers extending from opposite sides of said openings to a point adjacent the center of said opening and then being reversely bent upon themselves to provide adjacent folded edges extending across said openings, and adhesive means securing opposite sides of said reversely bent intermediate layers to said upper and lower layers in an area adjacent to the periphery of said openings, whereby said finished buttonhole construction is completely devoid of any stitching.

3,675,280
FASTENERS
Harry Herbert Winslade, Feltham, England, assignor to Inter-Locked Fasteners Limited, Twickenham, Middlesex, England
Filed Dec. 4, 1970, Ser. No. 95,033
Claims priority, application Great Britain, March 6, 1970, 10928/70; Oct. 30, 1970, 51,842/70
Int. Cl. A44b 17/00
U.S. Cl. 24—221 K 5 Claims

A fastener receptacle is adapted to receive a rotatable stud having a shank with a pin-like lateral projection thereon and comprises a body with a bore which accommodates the stud shank. The wall of the receptacle is provided with a slot which defines a helical ramp up which the pin-like projection passes during the fastening operation, the pin-like projection being held, by spring-loading of the stud, in a detent at the end of the

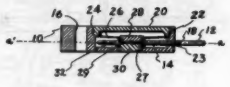


ramp. Means are provided to attach the receptacle and stud to their respective panels or the like which are to be fastened together.

3,675,281
SEAT BELT BUCKLE ASSEMBLY
Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, Mt. Clemens, Mich.
Filed April 16, 1970, Ser. No. 29,161
Int. Cl. A44b 19/00
U.S. Cl. 24—230 8 Claims

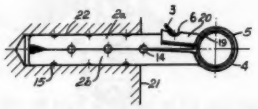
A seat belt buckle assembly including a housing in which a latch bar is movably disposed to be moved by a push button between a latched position for engaging a tongue and a release position for allowing the tongue to be removed from the housing. A leaf type spring normally urges the latch bar upwardly toward the latched position. The novelty resides in the utilization of a cup-shaped diaphragm disposed in sealing engagement with the bottom wall of the housing to define a chamber with the bottom wall of the housing. The bottom wall of the housing has a hole therein and the diaphragm includes a flap which normally is disposed over the hole for sealing the opening in response to a sudden rise in pressure in the chamber which in turn results from the application of a predetermined force urging the latch bar to the release position but which allows flow through the opening during the application of a lesser force urging the latch bar to the release position whereby the buckle assembly is prevented from unlatching or releasing the tongue in response to sudden impact or like force.

3,675,282
MECHANICAL FUSE
Stanley E. Summers, Woodland Hills, and Clyde W. Seltzer, Santa Ana, both of Calif., assignors to Ametek, Inc., New York, N.Y.
Filed Oct. 23, 1970, Ser. No. 83,367
Int. Cl. A44b 17/00
U.S. Cl. 24—230 SL 9 Claims



A mechanical fuse is described which links two members together in yieldable engagement permitting their separation when the separation forces exceed a predetermined value. The fuse comprises a female member having a housing with a slit in its wall for insertion of a tongue of the male member. A frustoconical spring washer is supported within the housing, and the washer supports a latch in the form of a button in its center aperture. The button is biased against the tongue of the male member and engages an aperture in this member. The sides of one or both of the aperture and button are bevelled so that a force applied to withdraw the tongue transmits a force component which compresses the spring washer. When this force component equals or exceeds the load of the washer, the washer withdraws and releases the tongue of the male member.

3,675,283
ATTACHMENT DEVICES FOR ELONGATE MEMBERS
Dragutin T. Gregorovic, 1, quai Marcellis, Liege, Belgium
Filed Oct. 2, 1970, Ser. No. 77,422
Int. Cl. A44b 21/00; F16l 3/12
U.S. Cl. 24—73 SA 10 Claims

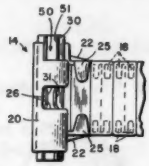


A device for attaching an elongate member to a support surface comprises an anchoring part for penetrating a hole in the support surface and a clamping part for engaging the elongate member. The device is a one-piece item made from resilient strip material. The anchoring part has a generally elongate tubular shape and is connected at a trailing end to the clamping part. The clamping part includes two portions, each having a semi-circular cross-section in a direction at right-angles to the anchoring part. One portion is bendable to grip an elongate member between the portions. Means are provided for locking the one portion in the gripping position.

ERRATUM
For Class 24—201 A see:
Patent No. 3,675,499

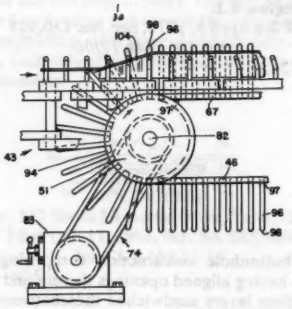
3,675,284
END ATTACHMENT FOR WATCH BANDS
Kurt A. Rieth, Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed April 23, 1971, Ser. No. 136,747
Int. Cl. A44c 5/18
U.S. Cl. 24—265 B 5 Claims

An end attachment for watch bands which permits use of a watch band with wrist watches having different spacings between their attachment lugs. The attachment includes a generally tubular insert member which includes at least one outwardly biased, inherently resilient tab, at least one side of



the tab comprising a cam surface inclined towards the end of the tab for facilitating insertion of the insert member into and withdrawal of the insert member from a generally tubular end member of the end attachment which has a slot intermediate its ends.

3,675,285
APPARATUS FOR CHANGING MESH SIZE OF NON-WOVEN NETTING
Lamar T. Atwood, and Lester Gidge, both of Nashu, N.H., assignors to Union Carbide Corporation
Division of Ser. No. 652,337, July 10, 1967, Pat. No. 3,605,220. This application Sept. 24, 1970, Ser. No. 75,043
Int. Cl. B32b 5/08; D04b 3/10
U.S. Cl. 28—1 CL 3 Claims

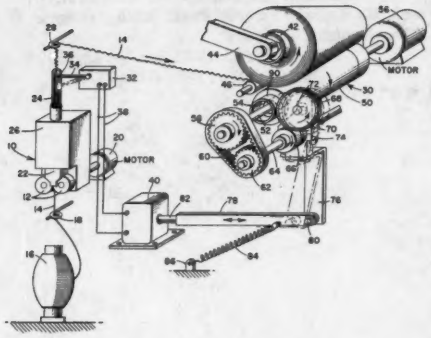


An apparatus and method for reducing the size of mesh in a non-woven, criss-cross, netting advancing along a path in a netting machine, the netting being carried by its selvedge loops on a pair of pin type carriers. A pair of endless transfer belts advance at a lesser speed than the netting, each positioned under one of the selvedge loop portions of the netting. The selvedge loop portions are either cut off the pin carrier and clamped against the transfer belts or lifted off the pins by elongated stripping fingers carried by the transfer belts, to advance therewith.

3,675,286
SYNCHRONIZING YARN WINDING TO STUFFER CRIMPER OUTPUT
Charles R. Cabello, Wilmington, Del., assignor to Joseph Bancroft & Sons Co., Wilmington, Del.
Filed Nov. 12, 1970, Ser. No. 88,931
Int. Cl. D02g 1/12
U.S. Cl. 28—1.7 11 Claims

Crimping yarn in a stuffer crimper and winding crimped yarn from the core produced by a substantially uniform rate of

feed to the crimper is carried out with the sensed volume of the core utilized to selectively change the rate of crimped yarn winding onto a package support. The yarn winder has two drive means, on including an overrunning clutch through



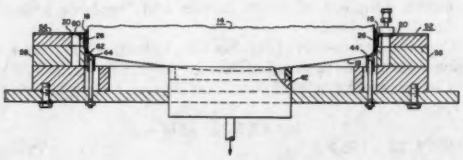
which yarn winding is normally carried out and the other including a friction roller which frictionally drives the yarn winder faster to overrun the overrunning clutch when an increased core of yarn is sensed in the crimper chamber.

3,675,287

METHOD FOR PROVIDING MOUNTING BRACKETS ON A CATHODE RAY TUBE INTEGRAL WITH THE IMPLOSION PROTECTION SYSTEM OF THE CATHODE RAY TUBE

Garth M. McLeod, Dundee; Clinton R. Copeland, and Gilbert N. Rieger, both of Elmira, all of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 11, 1927, Ser. No. 80,080
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 **2 Claims**



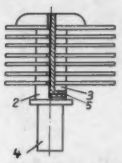
A method of providing mounting brackets on a cathode ray tube which utilizes an implosion protection system of the type comprising a rimband member positioned near the mold match line of the panel portion of the cathode ray tube. The rimband consists of two symmetrical half sections which are secured to the rear of the viewing area of the cathode ray tube by means of a tension band. The mounting lugs are provided on the rimband and are accurately positioned with respect to predetermined points located on the diagonals of the face plate of the cathode ray tube and referred to as the Z-points in the industry to insure that when the cathode ray tube is mounted within a cabinet or chassis that the cathode ray tube face plate will be accurately positioned with respect to a portion of the cabinet normally the bezel.

3,675,288

PROCESS OF MANUFACTURING A TRIMMER CAPACITOR

Alfred Tronser, 7541 Engelsbrand, Germany

Filed Sept. 23, 1970, Ser. No. 74,769
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.41 **1 Claim**



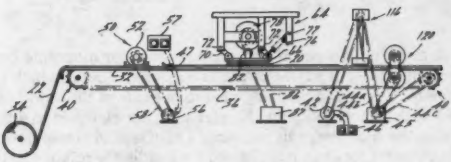
A single length of profiled stock is machined in a single operation with a single tool to form a rotor portion and a stator portion integral therewith. The rotor and stator portions are subsequently separated from each other by an axial cut and a transverse cut. The separated rotor and stator portions are assembled to form a trimmer capacitor.

3,675,289

APPARATUS AND METHOD FOR PREPARING PIPED COVERING MATERIALS

Alfred J. Mark, Newtonville, Ontario, Canada, assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 27, 1970, Ser. No. 40,980
Int. Cl. B68g *13/02*
U.S. Cl. 29—91 **12 Claims**



A method and apparatus for preparing upholstery covering including sharply defined pipes wherein rotary cutting blades are used to cut slits in a riser material; a fabric is subsequently placed over the riser material, pleated into the slits and sewed therein to the riser material to form a series of pipes in the covering.

3,675,290

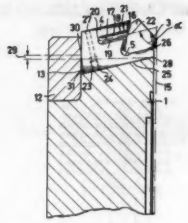
ADJUSTABLE TOOL HOLDER FOR RELEASABLE MILLING CUTTER BITS FOR USE IN REPLACEABLE-BIT MILLING CUTTER HEAD-TYPE MILLING MACHINE

Kurt Mayer, Tubingen, Germany, assignor to Montanwerke Water GmbH, Tubingen, Germany

Filed March 3, 1971, Ser. No. 120,667
Claims priority, application Germany, Sept. 2, 1970, P 20 43 453.1
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **10 Claims**

The milling cutter head has slots to receive bit holders; each holder is a plate-like body formed with an opening to hold the bit, and a pair of slits directed to the opening which define, therebetween, a tongue extending in the direction toward the opening into which the bit is inserted. By pressing the tongue toward or away from the slits, for example by means of a screw bearing against the side of the tongue, the position of the bit

with respect to the cutting plane can be adjusted. The holder is additionally formed with a bearing surface fitting on the milling head, the bearing surface having a screw which can be



screwed to extend slightly therefrom and thus tip the entire holder about the front edge of the milling cutter head, to provide for angular adjustment.

3,675,291

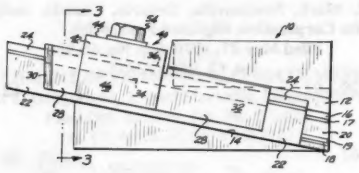
COMBINATION CUT-OFF AND CHAMFER TOOL

Howard N. Girardin, Grosse Pointe, Mich., assignor to Empire Tool Company, Memphis, Mich.

Filed Feb. 19, 1971, Ser. No. 116,752

Int. Cl. B26d *1/04*

U.S. Cl. 29—97 **5 Claims**



A combination cutoff and chamfer tool for mounting on a compound rest of a lathe or the like machine tool in which the chamfer tool is mounted adjacent to one side of the cutoff tool and both, cutoff tool and chamfer tool, are clamped together within the tool holder by means of a mechanical clamp device; the chamfer tool can be adjusted longitudinally relative to the cutting edge of the cutoff tool.

3,675,292

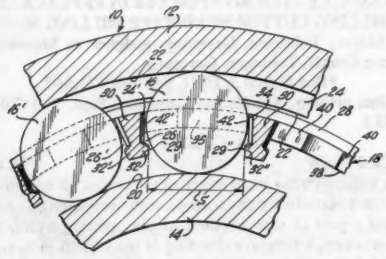
METHOD FOR MAKING A ROLLER BEARING RETAINER

James L. Vannest, New Britain, Conn., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 778,684, Nov. 25, 1968, Pat. No. 3,628,839. This application May 14, 1970, Ser. No. 48,734

Int. Cl. B21d *53/12*; B23p *13/04*

U.S. Cl. 29—148.4 C **10 Claims**



An economical machining method is described for manufacturing roller-bearing retainer rings wherein lubricating cavities are formed in the sides rimming the roller-element pockets, the roller pockets and lubrication concavities being conveniently machine-formed simultaneously with radially recessed roller supports.

3,675,293

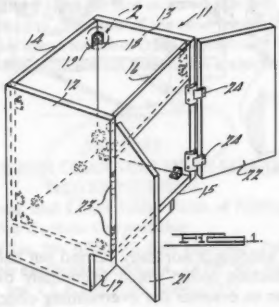
METHOD OF LOCATING A BRACKET

Frank R. Hajduk, Lincoln Park, Mich., assignor to Regis Manufacturing Company

Filed March 23, 1970, Ser. No. 21,730

Int. Cl. B23p *13/00*; B23q *17/00*

U.S. Cl. 29—150 **5 Claims**



A cabinet assembly of the knockdown type embodying male and female brackets mounted contiguous to peripheral edges of members for affixing the members together in a snap together manner. A method and structure for locating the brackets relative to the respective members in preselected locations is employed. Additionally, the brackets embody improved resilient fingers for holding the brackets and members in an interlocked condition.

3,675,294

METHOD OF MAKING A BLADED ROTOR

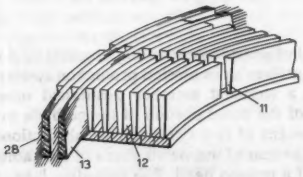
Jack Palfreyman, and Henry Edward Middleton, both of Derby, England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 806,188, March 11, 1969, abandoned. This application Dec. 22, 1970, Ser. No. 100,563

Claims priority, application Great Britain, March 20, 1968, 13,498/68

Int. Cl. B21k *3/04*

U.S. Cl. 23—156.8 R **8 Claims**



A bladed rotor is made by a method comprising forming a plurality of similar annular wall members into an annular assembly in which there is a circumferentially extending annular recess between each adjacent pair of annular wall members, and in which there are a plurality of angularly spaced apart ax-

ially extending slots which extend to the circumference of the assembly, filling each such annular recess with fibrous material, and securing in the said slots tanged root portions of aerofoil-shaped blades, the blades being formed of fibrous material and the fibers in the blades being bonded to the fibers in the recesses.

3,675,295

METHOD FOR THE FABRICATION OF RINGS FOR A WATCH DIAL

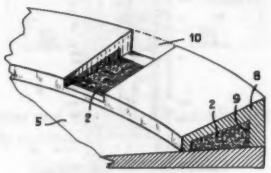
Gilbert Feller, Le Locle, Switzerland, assignor to Metalem S. A., Le Locle, Switzerland

Filed Oct. 12, 1970, Ser. No. 79,778

Claims priority, application Switzerland, Oct. 14, 1969, 15353/69

Int. Cl. B23p *13/00*; G04b *19/06*

U.S. Cl. 29—177 11 Claims



A method for the fabrication of rings or the like possessing decorative or indicator symbols or figures, for instance hour symbols or figures for small watches, which method comprises the steps of producing at least one substantially ring-shaped groove at the base of a metallic ring member, which base is hidden from the observer of the watch or article. Then at least one electrically non-conductive material is applied in such groove or grooves, and thereafter at the locations of the ring member where the symbols or figures are to be produced on the surface of such ring member which is disposed opposite the groove or grooves there is performed a material removal operation in order to expose the aforementioned electrically non-conductive material.

3,675,296

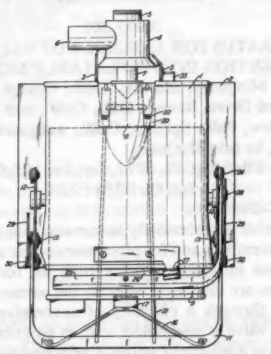
HOLDER FOR OXYGEN PRODUCING CANISTER

Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Sept. 25, 1970, Ser. No. 75,380

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 P 8 Claims



A receptacle is open at its bottom in order to receive an oxygen producing canister. A bail is disposed below the receptacle and has end portions extending upwardly along its opposite sides. The ends of the bail are pivotally connected to the receptacle to permit the bail to be swung backward out of the way of a canister that is being inserted up into or removed from the receptacle and to permit the bail to then be swung forward beneath a canister to support it in a standby position. There are means for guiding the ends of the bail upwardly along the sides of the receptacle. A handle straddles the receptacle and has a front portion extending across its lower part, the ends of the handle being pivoted to the receptacle above the bail. Links are pivotally connected to the handle and to the bail for lifting the bail when the handle is swung upwardly in order to raise a canister resting on the bail to operating position.

3,675,297

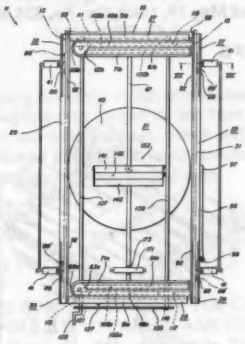
MACHINE FOR ASSEMBLING A PRE-HUNG DOOR UNIT

Tony E. Appleton, 4185 Parkchester, Memphis, Tenn.

Filed March 1, 1971, Ser. No. 119,594

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 R 10 Claims



A machine for aligning and rigidly holding a plurality of lumber pieces selectively defining various size door jambs while a workman suitable secures these and other lumber pieces defining door frame structure one to the other and hingedly attaches a door thereto. The machine includes mechanically driven expandable frame structure for convenient adjustment thereof to facilitate assembling of various size pre-hung door units, pneumatic operable jamb-gripping structure for holding the jambs in an optimum arrangement while the workman secures the header thereto and subsequently completes the pre-hung door unit, and a pneumatic operable transverse bar jack for centrally supporting multiple doors having no door stop structure, e.g., bi-fold or double panel door units, in an optimum arrangement while the workman suitably secures these type doors to the door frame structure.

3,675,298

MICROMANIPULATOR FOR MULTILEVEL ASSEMBLY

Paul Charles Michaelis, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

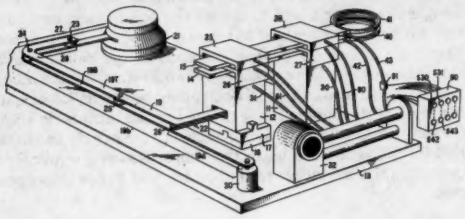
Filed Dec. 4, 1970, Ser. No. 95,057

Int. Cl. H05k *13/00*

U.S. Cl. 29—203 V 5 Claims

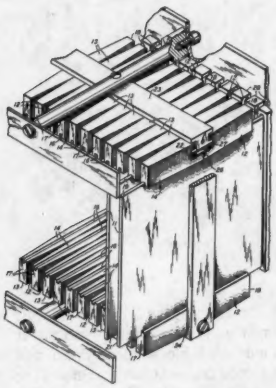
A micromanipulator for positioning a number of elements for multilevel assembly is achieved with a single displacement control mechanism. The mechanism functions to secure itself mechanically to ends of cantilever members to which the elements are secured, in turn, for manipulation. The arrangement may be thought of as a pair of ladders between corresponding

rungs of which planks are laid. Individual planks can be extended by a vacuum system which fixes selected ends of the



planks with respect to the two ladders and by moving one of the ladders.

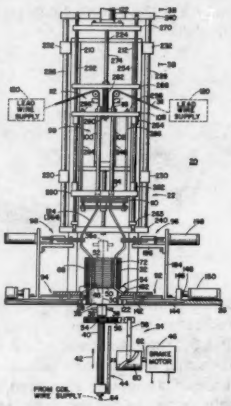
3,675,299
ARTICLE MOUNTING APPARATUS
Henry H. Sherrill, Jr., Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed May 19, 1969, Ser. No. 825,893
Int. Cl. H02b *1/04*
U.S. Cl. 29—203 B **8 Claims**



Articles, such as printed wiring boards, are retained between facing pairs of article retainers mounted on elongated guide tracks. The article retainers are made of a flexible material and have central portions of maximum thickness. Each article retainer is supported only at its thickest central portion by a single guide track. The article retainers locate the articles at desired spacings along the guide tracks. Pivotal flexing displacement of the article retainers permits non-uniform angular orientation of the retained articles, e.g., to compensate for misalignment between wiring board conductive paths and fixed connector assemblies.

3,675,300
LEAD WIRE INSERTING MECHANISM FOR STATOR WINDING APPARATUS
Paul H. Reust, and Donald R. Taube, both of Fort Wayne, Ind., assignors to Essex International Inc., Fort Wayne, Ind.
Filed Aug. 28, 1970, Ser. No. 67,950
Int. Cl. H02k *15/00, 15/06*
U.S. Cl. 29—205 C **22 Claims**

Apparatus for inserting external lead wires in slot dynamoelectric machine stator core slots and for positioning coils in the slots over the lead wires thereby to anchor the same. Elongated tubes are provided having inner and outer ends with the lead wires extending therethrough. The inner tube ends are inserted in the bore of the core adjacent the slot entrances and the lead wires are advanced so that end portions extend outwardly from the inner tube ends and from one end of the core. First clamping members are provided movable laterally between extended positions in which they initially engage the lead wire end portions and retracted positions in which they pull the end portions laterally outwardly away from the bore. The tubes are then withdrawn from the bore to a retracted position with their inner ends spaced longitudinally from the other end of the core and with other lead wire portions extending between their inner ends and the core. Second

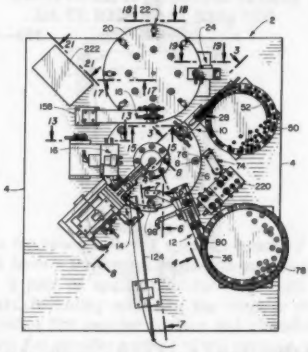


clamping members are provided movable laterally between extended positions in which they engage the other lead wire portions and retracted positions in which they pull the other lead wire portions laterally outwardly away from the bore, retraction of both clamping members thereby laterally pulling the respective lead wire portions outwardly away from the bore and seating the lead wires against the bottoms of the slots. With the lead wires thus clamped, coils are positioned in the slots over the lead wires therein, as by being directly wound in the slots by a gun-type coil winder. Following positioning of the coils in the slots over the external leads, the other lead wire portions are severed and lanced on either side thereof to provide strippable ends for the other lead wire portions and the end portions of the next lead wires.

3,675,301
APPARATUS FOR ASSEMBLY OF VALVES AND INSERTION INTO INFLATABLE ARTICLES
Kenneth L. McQuary, Marina, Calif.; George H. Karlin, 722 N. Rexford Drive, Beverly Hills, Calif., and Bert Lane, 713 Scenic View, Palm Springs, Calif., assignors to said Karlin and Lane, by said McQuary
Filed Jan. 11, 1971, Ser. No. 105,508
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B **26 Claims**

An apparatus for essentially automatic assembly of two-element valve members and for placement of the assembled valve members into inflatable articles such as, for example, balloons. Means are disclosed wherein the elements of the valve are carried through a plurality of successive work stations wherein the valve is assembled, and, in an exemplary embodiment, wherein a length of string is attached to a tab of one of the valve elements and wound around a spool portion thereof, and delivered into a receiving position so that a balloon neck may be manually placed around the valve and thereafter the balloon with the associated valve is removed and ready for

packaging or other disposition thereof. All of the work station operations are automatic with the exception of the inflatable



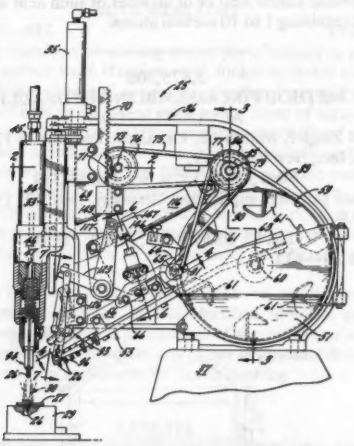
article placement and this is done manually to enable inspection and quality control.

3,675,302

AUTOMATIC ASSEMBLY MACHINE

Paul H. Dixon, c/o Dixon Automatic Tool, Inc., 2300 23rd Avenue, Belvidere, Ill.

Filed Dec. 9, 1970, Ser. No. 96,329
Int. Cl. B23q 7/10; B23p 19/04
U.S. Cl. 29—211 30 Claims



Screws fed from a hopper to an elongated delivery track by a feeding drum are picked up one-by-one from the track by a transfer device and are delivered to a chuck which surrounds a power rotated and power reciprocated screwdriver for driving the screws into a workpiece.

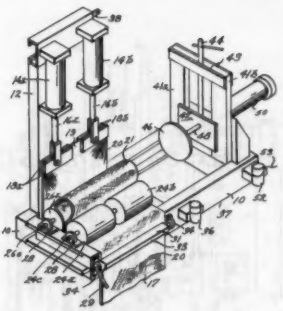
3,675,303

HOSE HOLDER AND COUPLING INSERTER MACHINE

Benjamin I. McKinnon, Atlanta, Ga., assignor to Equipment Sales Company, Inc., Atlanta, Ga.

Filed Oct. 28, 1969, Ser. No. 871,837
Int. Cl. B23p 19/04
U.S. Cl. 29—237 8 Claims

An apparatus is described which grips the circumference of a hose or the like and holds same to allow a coupling or the like to be inserted therein or otherwise attached thereto. A flexible, web-like material is used as a means of constricting the longitudinal movement of the hose; the web-like material is tightened around a major portion of the circumference of



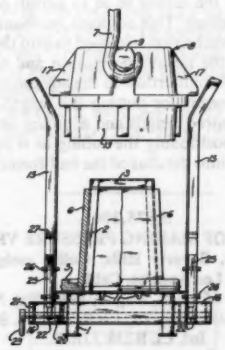
the hose, gripping it tightly. A thruster means is provided for forcing the coupling into an end of the hose. The thruster is mounted on a movable carriage which will allow it to be properly positioned in order to accommodate the length of hose and the length of coupling being used.

3,675,304

APPARATUS FOR LINING A HOT TOP CASING WITH INSULATING PANELS AND RING

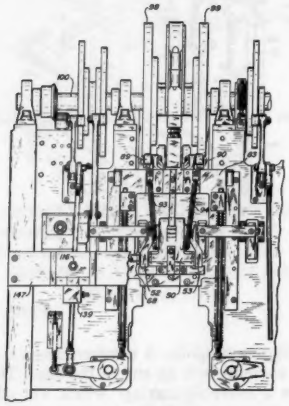
Joseph Perri, Corapolis, Pa., assignor to The Susquehanna Corporation, Fairfax County, Va.

Continuation-in-part of Ser. No. 726,115, May 2, 1968, abandoned. This application July 2, 1969, Ser. No. 842,076
Int. Cl. B23p 19/00
U.S. Cl. 29—238 9 Claims



A hot top casing with a downwardly tapered pouring opening is lowered around an upwardly tapered stand of one or more inclined insulating panels and a ring to line the casing, with or without clips or attachment devices to hold the panels and ring in place.

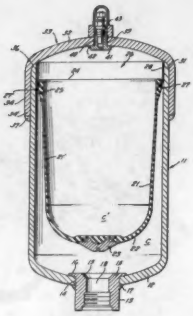
3,675,305
METHOD AND APPARATUS FOR APPLYING PLASTIC GRIPS TO WIRE BAIL HANDLES
Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes Township, N.J.
Continuation-in-part of Ser. No. 825,800, May 19, 1969, abandoned. This application Jan. 19, 1971, Ser. No. 107,622
Int. Cl. B23p 11/00, 19/04
U.S. Cl. 29—439 30 Claims



A method and apparatus for applying plastic grips to wire bail handles. This apparatus is used in combination with a wire bail-forming mechanism which feeds, cuts and forms wire into a wire bail for attachment to an eared container. The bail-forming apparatus has upper and lower dies which have their midportions contoured to receive and retain cut length of plastic tubing as a length of wire is inserted therethrough after which it is bent into a generally U-shaped bail. A grip transfer arm is mounted on the bail-forming mechanism and at its initial tubing-receiving limit of movement receives an advancing end of a length of tubing and as the arm is moved to its tube-delivering limit of movement the tubing is cut and then positioned in way of the advancing wire used to make the bail handle. The tubing advance mechanism has a check mechanism disposed to engage the tubing so as to permit only a forward movement of the tubing. This advance mechanism includes a movable gripping mechanism disposed to grip the tubing when moved to provide the advancing motion and to slide on the tubing when moved counterflow to the advancing motion. The delivery arm has means for cutting the length of tubing advanced into the desired length and a tubing retaining means for retaining and positioning the tubing as it is received and moved toward and into the dies of the bail-forming apparatus.

3,675,306
METHOD OF MAKING PRESSURE VESSEL
Edward M. Greer, Beverly Hills, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.
Division of Ser. No. 657,621, Aug. 1, 1967, Pat. No. 3,500,866. This application May 29, 1969, Ser. No. 828,842
Int. Cl. B23k 31/02
U.S. Cl. 29—487 3 Claims

This disclosure relates to the art of pressure vessels, more particularly of the type having a cylindrical container, one end of which is closed and has a port and the other end of which defines an open mouth. The container has a deformable bladder of resilient material positioned therein, said bladder having a large mouth with an annular metal supporting member secured thereto and extending outwardly therefrom, the free edge portion of said supporting member which is longitudinally spaced from the region where the bladder is

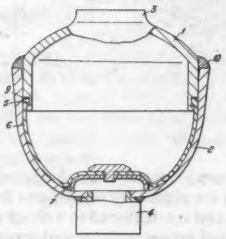


secured thereto, being fused to the mouth of the container. The container has suitable means closing the mouth thereof.

3,675,307
SOLDERING FLUXES
Rudolf Siegfried Strauss, and Peter David Teitz, both of London, England, assignors to Fry's Metals Limited, London, England
Filed Aug. 8, 1969, Ser. No. 848,701
Int. Cl. B23k 31/02, 35/36
U.S. Cl. 29—495 11 Claims

A method of soldering or tinning in which the flux used consists of or contains a hydrohalide, other than a hydroiodide, of a monobasic amino acid or of an ester of such acid with an alcohol containing 1 to 10 carbon atoms.

3,675,308
METHOD FOR ASSEMBLING HYDRAULIC ACCUMULATORS
Helmut Ziegler, Muhlheim, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed July 9, 1970, Ser. No. 53,339
Claims priority, application Germany, July 12, 1969, P 19 35 493.9
Int. Cl. B23p 19/04, 17/04, 11/00
U.S. Cl. 29—422 1 Claim



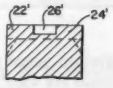
A method of assembling hydraulic accumulators of the bladder type having a casing formed from two open-mounted shells rigidly fitted together comprising the steps of fitting the bladder on the mouth of the inner shell, sliding the bladder and inner shell into the outer shell until the bladder fits closely against the inner surface of the outer shell, and rigidly connecting the shells in this position.

3,675,309

PROCESS FOR RECONDITIONING CYLINDER HEADS

Stanley B. Borkoski, Silver Spring, Md., assignor to Pre-heat Welding Co., Inc.

Filed Feb. 22, 1971, Ser. No. 117,613
Int. Cl. B22d 19/10; B23p 7/00
U.S. Cl. 29—401 8 Claims



A process for reconditioning cylinder heads of diesel engines, which have a transverse plate with an annular protrusion having a pair of spaced annular rings with a groove between them, including removing the rings to provide the protrusion with a flat annular surface and chamfered edges, placing on the flat annular surface of the protrusion a hollow cylindrical member which extends radially beyond the protrusion and annular surface, welding the annular member to the protrusion by fusing the extending portion of the annular member and causing it to flow into said chamfered edges, and machining a groove in said annular member.

3,675,310

SOLDERING METHOD

Alfred E. Schwaneke, Rolla; Wilbert L. Falke, St. James, and Orrin K. Crosser, Rolla, all of Mo., assignors to The United States of America as represented by the Secretary of the Interior

Filed April 20, 1971, Ser. No. 135,768
Int. Cl. B23k 31/02
U.S. Cl. 29—492 15 Claims

Metallic members consisting essentially of copper or copper alloy, low carbon steel, stainless steel, nickel or nickel alloy, or any combination thereof, are joined together by initially coating the members to be joined with a thin layer of nickel, followed by application of solder consisting essentially of zinc or zinc alloy and appropriate fluxes containing metallic salts, at a temperature of about 320° to 500° C. The metallic members may also be joined by addition of nickel or nickel salts to the flux material so that the required thin nickel coating is obtained by a reaction during soldering such that the coating is deposited on the surface of the metallic members from the flux.

The thin layer of nickel, obtained as above, constitutes a "sacrificial metal coating" that is absorbed into the molten solder during soldering. The method of the invention is particularly useful in manufacture and repair of automobile radiators and utensils or appliances for home cooking.

3,675,311

THIN-FILM DIFFUSION BRAZING OF NICKEL AND NICKEL BASE ALLOYS

Robert R. Wells, Fullerton, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed July 2, 1970, Ser. No. 52,118
Int. Cl. B23k 31/02, 35/24
U.S. Cl. 29—498 5 Claims

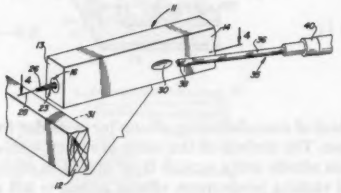
A method of joining nickel and nickel base alloys comprising a thin film of metal selected from a group consisting of titanium and niobium. Coating both sides of the film chosen with a metal selected from the group consisting of silver and gold, placing the coated film between the surfaces to be joined, pressing the surfaces together whereby the coated film forms an intermediate layer, and heating the film to at least a eutectic temperature to form a brazing liquid and holding for a period of time sufficient to obtain a ternary mixture of the metals utilized in the area between the surfaces joined.

3,675,312

METHOD FOR JOINING ABUTTING ELEMENTS BY CONCEALED MEANS

Patricio Herman, 1954 Tacoma Street, Cuyahoga Falls, Ohio

Division of Ser. No. 804,415, April 13, 1971, Pat. No. 3,574,510. This application May 21, 1970, Ser. No. 48,604
Int. Cl. B23p 19/00
U.S. Cl. 29—526 4 Claims



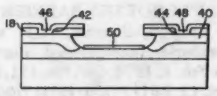
A concealed means for joining two abutting elements. The first element has at least an engaging surface and an access surface oriented angularly with respect to the engaging surface. An anchor means is secured within the engaging surface such that the axis thereof extends outwardly from the engaging surface. The second element also has an engaging surface that can be abutted to the engaging surface of the first element. The first element has an ingressive passage that opens through its access surface and communicates with the anchor means. The ingressive passage is oriented obliquely to the axis of the anchor means, and the actual fastening of the first and second elements is achieved by a screw means that extends through the anchor means of the first element and penetrates the engaging surface of the second element. Tightening and loosening the screw means is accomplished by driving means having a flexible shaft for negotiating the oblique intersection of the ingressive passage with the axis of the anchor means and for permitting actuation of the screw means by rotation of the shaft from exteriorly of the first element.

3,675,313

PROCESS FOR PRODUCING SELF ALIGNED GATE FIELD EFFECT TRANSISTOR

Michael C. Driver, Trafford, and Martin J. Geisler, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 1, 1970, Ser. No. 77,117
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 6 Claims



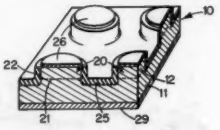
This disclosure relates to a process for preparing a self-aligned gate field effect transistor in which the source-drain spacing is automatically held to a minimum as a result of the processing steps.

3,675,314

METHOD OF PRODUCING SEMICONDUCTOR DEVICES

Clifford A. Levi, Billerica, Mass., assignor to Alpha Industries, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 835,402, June 23, 1969, abandoned. This application March 12, 1970, Ser. No. 19,085
Int. Cl. B01j 17/00; H01l 5/00
U.S. Cl. 29—578 12 Claims



Method of manufacturing silicon mesa diodes from a wafer of silicon. The surface of the wafer is coated with a first layer of silicon nitride and a second layer of silicon oxide. By masking and etching procedures, silicon nitride is left only on the portions of the surface defining the mesas to be formed. The wafer is etched to form the mesas and then treated to form a passivating silicon oxide coating at all the exposed surfaces of the wafer. The silicon nitride is removed from the upper surfaces of the mesas and metal contacts are applied to these upper surfaces. The wafer is subsequently divided into discrete dice, each containing a mesa, and the dice are mounted in suitable enclosures.

3,675,315

METHOD FOR EXTRACTING WIRES FROM A CABLE BUNDLE

Charles W. Zebe, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1969, Ser. No. 852,283
Int. Cl. B23p 19/02
U.S. Cl. 29—427 8 Claims

A method is disclosed for tracing and extracting unused cross-connection wires from a distributing frame by utilizing a tube having a detachable hollow conical head at the leading edge. One end of the dead wire or wire pair to be extracted is passed through the head and attached to a pull wire inside the tube. The head is inserted into the tube and the entire assembly is pushed along over the pull wire and the dead wire into the cable bundle until the dead wire is freed for extraction through the tube. A connection is provided on the tube for the application of pressurized air or smoke to aid in locating the leading end of the tube when an obstruction is encountered.

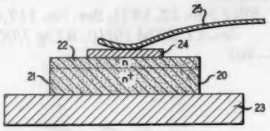
3,675,316

GROUP III-V SCHOTTKY BARRIER DIODES

Norman Nathan Axelrod, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 1, 1971, Ser. No. 111,307
Int. Cl. B01j 17/00; H01l 7/00
U.S. Cl. 29—576 10 Claims

A thin layer, with a relatively low active donor concentration (e.g. $<5 \times 10^{17}$ per cm^3), is produced in a slice of a Group III–V semiconductor material doped, with a Group VI dopant to a relatively high active donor concentration (e.g. $>10^{18}$ per cm) by maintaining the slice in a nonreacting atmosphere at an elevated temperature. The temperature is such that the equilibrium vapor pressure of the Group III constituent is greater than the equilibrium vapor pressure of the Group V constituent. Such materials are used, for example, in the fabrication of mm-wave Schottky barrier mixer diodes.

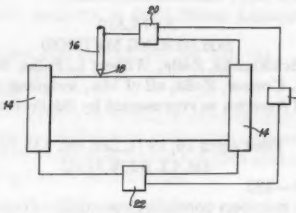


3,675,317

METHOD FOR SPIRALLING ELECTRICAL RESISTORS

John P. Martin; Darrell J. Beninger, both of London, Ontario, and John R. Lemon, East London, Ontario, all of Canada, assignors to Welwyn Canada Limited, London, Ontario, Canada

Filed May 13, 1970, Ser. No. 36,965
Int. Cl. H01c 7/00, 17/00
U.S. Cl. 29—620 10 Claims



A method for manufacturing electrical resistors of the type comprising turns of conductive metal or alloy film formed on a cylindrical substrate with a spiral track free of the film defined between the turns. The substrate is first provided with a complete film, and the tip of a conductive stylus is then brought into engagement with the film adjacent one end of the substrate. Current is passed through the stylus whereby the film is heated in the area engaged by the tip and film vaporization occurs. Relative movement between the substrate and stylus will result in a continuous spiral track free of the film as a result of the vaporization. The changes in resistance which occur during the processing can be continuously measured so that the processing can be discontinued when a desired resistance value is reached.

3,675,318

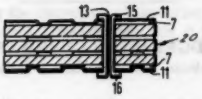
PROCESS FOR THE PRODUCTION OF A CIRCUIT BOARD

Hans-Hermann Merkenschlager, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich

Filed May 11, 1970, Ser. No. 35,959
Claims priority, application Germany, May 14, 1969, P 19 24 775.7
Int. Cl. H01b 13/00; H05k 3/00
U.S. Cl. 29—624 10 Claims

Production of multi-layered electrical circuit boards which have closely spaced circuit elements is accomplished by applying a solder-resistant lacquer coating to the outside surfaces of a plurality of conductor plates affixed together in juxtaposed relationship, producing bores through the plurality of circuit boards in a predetermined relationship to their circuitry placed thereon, depositing a first copper layer by currentless means upon the bore wall and the solder-resistant lacquer

coated surface, applying a galvanic-proof coating to the copper metal layer in predetermined areas leaving soldering eyes free of the galvanic-proof coating, galvanically coating the bores inclusive of the soldering eyes with a second copper



reinforcing layer, applying an etch-proof metal layer on the surface of said copper reinforcing layer, removing the galvanic-proof lacquer layer and the first copper layer by etching on the places not covered by the etch-proof metal layer.

3,675,319

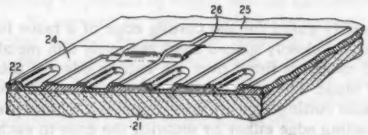
INTERCONNECTION OF ELECTRICAL DEVICES

George Elwood Smith, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, N.J.

Filed June 29, 1970, Ser. No. 50,780

Int. Cl. H05k 3/06

U.S. Cl. 29—625 **6 Claims**



At least two overlapping or crossing levels of electrically isolated conductors are used to interconnect regions of a microelectronic device. To minimize shorts at regions of overlap or crossing, the lower conductor is provided with a pronouncedly trapezoidal cross section to facilitate maintenance of a uniform thickness of insulation between the two conductors. To achieve this cross section, the lower conductor is made of a material which etches slower in the thickness direction than in the direction normal thereto. Typically the lower conductor may be a binary metal alloy whose composition varies with thickness or polycrystalline silicon whose doping or crystalline disorder varies with thickness.

3,675,320

ELECTRIC CONTACT MEMBER

Takashi Watanabe, Shizuoka-ken, Japan, assignor to Kabushiki Kaisha Kawai Gakki Susakusho, Shizuoka-ken, Japan

Division of Ser. No. 756,238, Aug. 29, 1968, Pat. No. 3,555,497. This application May 6, 1970, Ser. No. 34,969

Claims priority, application Japan, Sept. 2, 1967, 42/56270

Int. Cl. H01r 9/00

U.S. Cl. 29—630 D **8 Claims**

An electrical contact member is punched from a rolled sheet having a thick longitudinal section and an adjacent thin longitudinal section, the thick section forming a terminal portion on which a lead wire can be wrapped while the thin section forms a contact portion. The contact portion is bent to form a loop, and in the event that a pair of opposed contact portions are to be formed, they in turn are bent relative to the terminal portion such that their loops face one another.

3,675,321

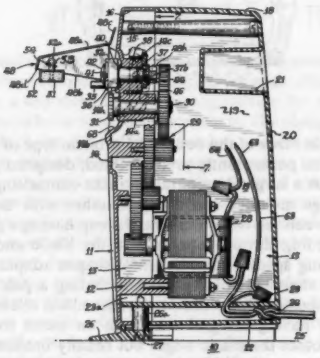
AUTOMATIC ELECTRIC CAN OPENER

Robert W. Arel, Shorewood, and Donald R. Meyer, Thiensville, both of Wis., assignors to John Oster Manufacturing Co., Milwaukee, Wis.

Filed June 24, 1970, Ser. No. 49,258

Int. Cl. B67b 7/38

U.S. Cl. 30—4 R **11 Claims**



An automatic electric can opener including a shaft supported cutter, rotatable between angular positions comprising a retracted condition for loading of a can into position for opening, a ready position for commencing the power piercing engagement of the can lid, an operative cutting position for providing a peripheral cut around the can lid, and a holding position for retaining the opened can in supporting engagement on the opener until the can is manually removed. A combination lid lifter and switch actuator means is operatively associated with the cutter support shaft and a switch for energizing motor driven can rotating means in order to initiate an automatic can opening cycle commencing with the power piercing of the can lid, followed by the peripheral cutting of the can lid until completely severed from the can body and finally automatic shutdown of the can rotating means after the can is opened.

3,675,322

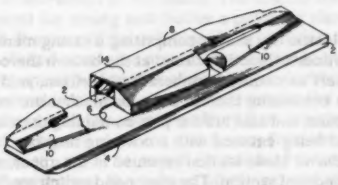
RAZOR BLADE ASSEMBLY

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

Filed May 25, 1970, Ser. No. 39,996

Int. Cl. B26b 21/40, 21/16

U.S. Cl. 30—32 **3 Claims**



A razor blade assembly for an injector razor, the assembly including a razor blade having a cutting edge, and a support

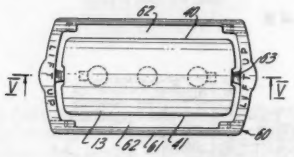
structure connected to the blade and removed from the cutting edge. The support structure is adapted to be received and retained by an injector razor.

3,675,323

DISPOSABLE PREASSEMBLED PLASTIC RAZOR

Paul A. Braginetz, Augusta County, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed July 18, 1969, Ser. No. 834,356
Int. Cl. B26b 21/06, 21/40
U.S. Cl. 30—32 6 Claims



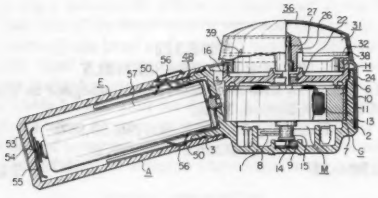
A disposable razor of the double edge blade type of molded plastic material permanently preassembled, designed particularly for use as a surgical preparation razor comprising a handle and bridge member and a cap member with the blade clamped between the two members, the cap having a plurality of pins extending through openings in the blade and bridge member having special complemental shapes adapted to insure correct alignment of the parts including a pair of pins riveted over the ends for securing the assembled relation, said cap member having integral therewith an outer frame arranged to protect the blade edges but readily broken off for use of the razor, and said bridge member having guard portions at the respective blade cutting edges of different character including different degrees of cutting edge exposure or shaving clearance for correspondingly different shaving conditions.

3,675,324

ELECTRIC DRY SHAVER

Norio Yamada; Yoshimasa Tanaka; Taisuke Ono, and Yoritaka Ikejima, all of Osaka, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1970, Ser. No. 8,623
Claims priority, application Japan, May 7, 1969, 44/35446
Int. Cl. B67b 7/38
U.S. Cl. 30—43.6 1 Claim



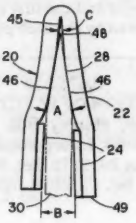
An electric dry shaver comprising a casing member including a cylindrical section closed at the bottom thereof and a tubular part extending peripherally therefrom, said cylindrical section containing therein a motor mechanism and a switch mechanism and said tubular part containing therein dry batteries and being encased with a covering member for gripping, and a shaver blade section mounted in the upper, open end of the cylindrical section. The motor and switch mechanisms are compactly packed in the cylindrical section and separated from the shaver blade section by means of a separator wall mounted in the open end of the cylindrical section. The separator wall including a peripheral wall provided on the inside with alternate smooth, sections and threaded sections and a stationary comb element having a skirt thereabout provided with external threads for attaching the comb to the threaded peripheral wall.

3,675,325

RAZOR EDGE SAFETY GUARD APPARATUS

Gunnar P. Michelson, 505 Sea Ranch Drive, Santa Barbara, Calif.

Filed July 6, 1970, Ser. No. 52,503
Int. Cl. B26b 21/54, 21/40
U.S. Cl. 30—90 16 Claims



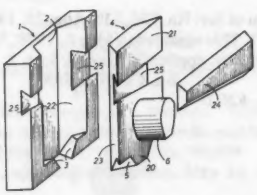
A safety guard for the cutting edge of a razor has a multiplicity of closely spaced apart relatively thin metal filament guard members fitted over the cutting edge of the razor or razor blade. The ends of the guard members on each side of the razor cutting edge are interconnected in close proximity to the cutting edge either by securing the ends to each other or by securing them to a respective elongated mounting strip. The safety guard is either permanently or removably secured to the razor.

3,675,326

ARRANGEMENT FOR RENDERING DETACHABLE THE INTERMEDIATE PARTS OF A FITTED DENTAL PROSTHESIS OR THE FIXED INTERMEDIATE PARTS OF A PARTIALLY REMOVABLE AND IRREMOVABLE PROSTHESIS OF THE DOLPER BAR TYPE

Paul Jules Rene Joseph Desmarets, Place Alber 3, 5430 Rochefort, Belgium

Filed March 13, 1970, Ser. No. 19,301
Claims priority, application Belgium, March 17, 1969, 71424
Int. Cl. A61c 13/22
U.S. Cl. 32—5 7 Claims



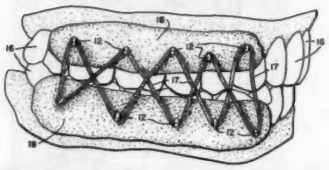
An arrangement for permitting the ready assembly and detachment of dental prosthesis including an attachment plate fastened to a dental post, a recess in the plate adapted to receive a slab upon which the intermediate portion of the prosthesis is mounted, and a co-operative locking rod for detachably locating and locking the plate and slab together, with all of the components having a coextensive surface which forms a sagittal part.

3,675,327

FILLED COLD-CURING ACRYLIC RESIN AS A SPLINTING MATERIAL

Eugene F. Huget, Rockville; Gerhard M. Brauer, Bethesda; John W. Kumpula, Rockville, and Simon Civjan, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Jan. 13, 1970, Ser. No. 2,588
Int. Cl. A61c *13/00*
U.S. Cl. 32—6 6 Claims



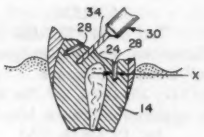
This disclosure describes a composition of matter made up of approximately 50 percent by weight calcium carbonate, approximately 50 percent by weight polymethylmethacrylate plus sufficient methyl methacrylate monomer to form a dough. This filled acrylic resin composition is useful in dental splinting methods. Also disclosed is a dental splinting method employing this filled acrylic resin composition in combination with interproximal pins and an elastic connector.

3,675,328

DENTAL ANCHOR

Bernard Weissman, 304 Ashland Place, Brooklyn, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,900
Int. Cl. A61k *5/02*
U.S. Cl. 32—15 9 Claims



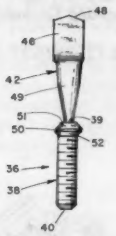
A dental anchor comprising an elongate member for anchoring a superstructure to a tooth. The elongate member includes at least two longitudinally spaced weakened portions which are defined by respective reduced thicknesses therein. Furthermore, the elongate member is provided with anchoring means or threaded portions spaced from one another by at least one of the weakened portions of reduced thickness. There is also provided a manipulating head which is spaced from one of the threaded portions by the other of the weakened portions of reduced thickness. The weakened portion of reduced thickness most remote from the manipulating head is of greater reduced thickness i.e., of lesser diameter than that of a weakened portion of reduced thickness most proximate the manipulating head. As a result, when the elongate member is inserted into a channel formed in the tooth, the threaded portion most remote from the manipulating head, severs automatically without overstressing the tooth thereby leaving the threaded portion most proximate the manipulating head in tact with the latter so that the latter threaded portion can be immediately inserted into a successive channel in the tooth without reloading the dental tool.

3,675,329

DENTAL ANCHORING PIN AND HEAD THEREFOR

Bernard Weissman, 304 Ashland Place, Brooklyn, N.Y.

Filed Jan. 20, 1971, Ser. No. 108,045
Int. Cl. A61k *5/02*
U.S. Cl. 32—15 11 Claims



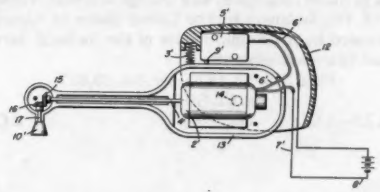
A dental anchor for securing a superstructure to a tooth understructure comprising an elongate member which integrally includes a self-threading anchoring portion for operative association with the tooth understructure. The elongate member further includes an enlarged headed anchoring portion for operative association with the superstructure to be mounted upon the understructure. The enlarged head acts to resist or enhance resistance to displacement of the superstructure relative to the understructure axially along the dental anchor. The elongate member is further integrally provided with a manipulating portion for permitting manipulation of the self-threading anchoring portion thereof. The manipulating portion is spaced from the enlarged headed anchoring portion by a weakened portion of reduced thickness the latter for permitting self-severing of the manipulating portion from the enlarged headed anchoring portion selectively.

3,675,330

POLISHING DEVICE

Myron E. Drapen, 3538 Woodbine Street, Chevy Chase, Md., and Ormond Lee Henry, 3924 Applewood Lane, Muskegan, Mich.

Filed Oct. 16, 1969, Ser. No. 866,994
Int. Cl. A61c *3/06*; A46b *13/02*
U.S. Cl. 32—59 3 Claims

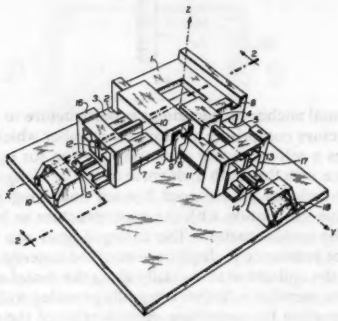


This invention relates to a polishing device comprising a casing, an electric motor within the casing and movable relative to the walls of the casing. The motor is biased by a spring to move in one direction. A switch, electrically connected to the motor, controls the flow of current thereto. The switch is provided with an actuating, spring-pressed button positioned in the path of movement of the motor. The shaft of the motor extends beyond the casing and carries a polishing element at its outer end. Pressure of the polishing element against the surface to be polished causes the motor to move against the force of the biasing spring and against the spring-pressed button to move the button to close the switch to energize the motor. When the pressure of the polishing element on the surface is relieved, the spring will move the motor away from the button and deenergize the motor to stop the rotation of the element. The type of motor and the voltage of the current supplied thereto are such that the motor will stall if the pressure on the polishing element exceeds a predetermined maximum pressure.

3,675,331
APPARATUS FOR THE MEASURABLE DISPLACEMENT OF AN OBJECT

Alfons Ernst, Traunreut, and Rudolf Hofling, Gauting, both of Germany, assignors to Dr. Johannes Heidenhain, Traunstein, Germany

Filed July 30, 1969, Ser. No. 846,137
Claims priority, application Germany, July 14, 1969, P 19 11 908.5
Int. Cl. G01b 21/20
U.S. Cl. 33—1 M 16 Claims

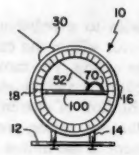


An apparatus for measurable displacement of an object in a plurality of coordinates by means of guide systems, which comprises an object carrier which is measurably displaceable. Guiding systems for the object carrier are separated from each other. Measuring systems are coordinated to the guiding systems and defining axes, and the working point is disposed on the object always in the section of the axes.

3,675,332
SPHERICAL MEASUREMENT DEVICE

Howard B. Miller, Hampton, and George E. Sweet, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 12, 1970, Ser. No. 10,827
Int. Cl. G01b 5/24
U.S. Cl. 33—1 SA 8 Claims

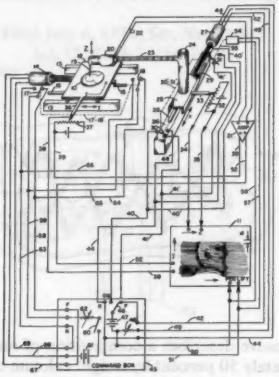


A measuring device having an elevational wheel mounted on an azimuth wheel with a spherical protractor supported by the elevation wheel in a manner such that a telescopic rod extending through the spherical protractor is capable of determining the distance of a point within a sphere from the surface of the sphere. In order to accomplish angular location of the inner surface a flat protractor can be adjustably mounted on the end of the measuring rod.

3,675,333
LINEAR THREE-DIMENSIONAL GAGING AND FORM MEASURING MACHINE

Gardner P. Wilson, Pasadena, Calif., assignor to Gould Inc., Chicago, Ill.

Filed April 8, 1970, Ser. No. 26,493
Int. Cl. B43l 13/10
U.S. Cl. 33—23 C 7 Claims

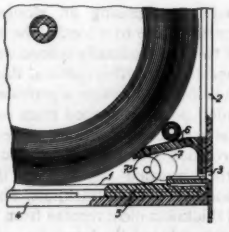


There is disclosed a device and method for the transposition of a three-dimensional X,Y,Z, axis relief configuration onto a two-dimensional X-Y-axis record surface. A stylus repeatedly scans the device, such as a coin, and a recorder pen repeatedly scans a record sheet in synchronism, each successive scan of the coin and recorder being offset slightly from the previous scan. When the stylus is moved in the Z or vertical direction by the surface of the coin the recorder pen is correspondingly moved in, for example, the Y direction, producing a two-dimensional picture of the coin with a three-dimensional appearance.

3,675,334
TAPE MEASURES

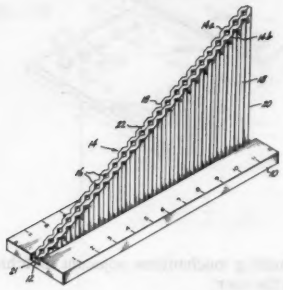
Andre Quenot, Besancon, France, assignor to Manufacture "Quenot Mabo,", Besancon, France

Filed May 25, 1970, Ser. No. 41,129
Claims priority, application France, May 29, 1969, 6917643
Int. Cl. G01b 3/10
U.S. Cl. 33—138 4 Claims



A locking device for a measuring tape which is automatically windable into a casing the device including a roller movably mounted within the casing and in an operative position in which it wedges the tape between a supporting surface and a surface inclined thereto. The roller is automatically removed from the operative position when the tape is pulled out and can be removed manually from the operative position by a push-button to allow rewinding of the tape.

3,675,335
WIRE CUTTING GAUGE
Mark Forster, 12556 25th Avenue, N.E., Seattle, Wash.
Filed Jan. 7, 1970, Ser. No. 1,224
Int. Cl. G01c 3/30, 5/02
U.S. Cl. 33—168 R 1 Claim

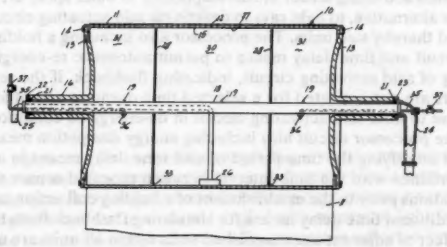


A wire cutting length gauge, used while wire is being cut in various groups of selected lengths, has multiple side by side holes of various depths to receive wire or tubing. After full insertion of the wire or tubing into a respective hole, a cutting location on the wire or tubing is determined, corresponding to the entry of the respective side by side hole. Each wire subsequently fully inserted in the same hole has its cutting location consistently determined at the same length.

3,675,336
METHOD FOR DRYING WOOD
Dallas S. Dedrick, Longview, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Continuation of Ser. No. 690,055, Dec. 13, 1967. This application July 17, 1969, Ser. No. 847,511
Int. Cl. F26b 1/00
U.S. Cl. 34—9.5 1 Claim

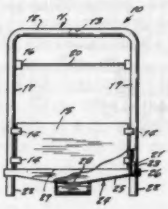
An improvement in the drying of wood which allows drying at an equal or faster than conventional rate with less degrade, fewer stresses, and less total shrinkage, comprising treating the wood prior to drying with a material capable of reducing the interfacial tension at the water-air boundaries in the cell structure of the wood. Preferably the wood is treated with an aqueous solution of a non-volatile surface active agent, such as an alkylarylsulfonate.

3,675,337
DRYER DRUM
Robert A. Daane, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.
Filed Nov. 12, 1970, Ser. No. 88,930
Int. Cl. F26b 3/32
U.S. Cl. 34—41 8 Claims



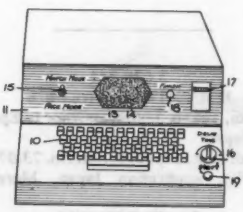
A drum structure for drying a sheet of material characterized by having means to control the heating profile along the length of the drum and thus control the amount of heat applied across the width of the web or paper being engaged by the drum. To control the heating profile, the rate of heat transfer of the heating medium such as steam is varied along the axial length of the drum by selectively mixing a non-condensible medium with the heating medium to reduce the rate of heat transfer. In one embodiment of the drum structure, the drum is provided with a plurality of sub-chambers formed by axially spaced interior partitions which sub-chambers enable control of the rate of heat transfer to the drum surface associated with each sub-chamber. In another embodiment, the inner surface of the drum is provided with axially spaced grooves and the drum has a second header for a non-condensible medium, which header has means to introduce the non-condensible medium to each groove to control the rate of heat transfer at the groove.

3,675,338
DRIP DRYER FOR DRIP DRY CLOTHING
John O. Maki, 4657 Frontenac, S., Seattle, Wash.
Filed Aug. 31, 1970, Ser. No. 68,218
Int. Cl. A47f 5/13
U.S. Cl. 34—239 3 Claims



A drying rack for supporting drip dry type of clothing, the device comprising an assembly formed of a pair of upstanding inverted U-shaped metal tubings that are interconnected by horizontal tubes, the frames supporting in an upper portion a horizontally extending plastic mesh upon which sweaters can be supported, the interconnecting tubes supporting drip dry clothes that can be hung, a lower end of the assembly being enclosed by vertical splash shields and the bottom of the assembly having a drip pan for collecting dripping water from the clothing.

3,675,339
KEYBOARD TEACHING MACHINE
Joseph La Marca, 299 W. 12th Street, New York, N.Y.
Filed Oct. 26, 1970, Ser. No. 83,839
Int. Cl. G09b 7/02
U.S. Cl. 35—6 7 Claims



A teaching machine for training students to acquire typewriter or other keyboard skills. The machine includes a display device adapted to visually present in random order characters of the type appearing on the keyboard, the presentation being made during a predetermined test cycle. In the "-

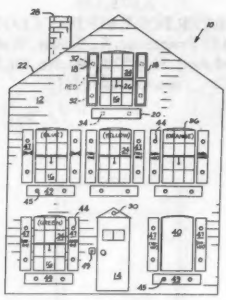
Match" mode of the machine, the student seeks to press a key corresponding to the character displayed, and only if he succeeds in effecting a match will this event be scored by a counter and a new character presented. In the "Pace" mode, the characters are continually presented during the test cycle at timed intervals, whether or not a match is effected, but only when a match is effected is the score counter advanced.

3,675,340

ELECTRO-MECHANICAL EDUCATIONAL APPARATUS

James E. Davis, 800 Evesham Avenue, Baltimore, Md.

Filed May 27, 1970, Ser. No. 40,901
Int. Cl. G09b 1/10
U.S. Cl. 35—9 D **4 Claims**



An electro-mechanical educational apparatus in the form of a solid tablet representing one side of a house, complete with detachable windows, shutters, and windowboxes. Each detachable window contains a magnet embedded in a unique position with respect to the window outline and adapted to actuate a magnetic switch embedded in the house in a corresponding position at the correct location for the particular window. The correct sequence of assembly of the windows is indicated by line or color markings on the house, by colors of changeable components such as the shutters, or by colors, numerals, words, or other keys on the window boxes, which are to be matched with corresponding indications on the windows.

Correct assembly is verified by depression of a manual switch which actuates a light or a doorbell as a reward for the accomplishment. Means are provided to help students grasp the windows and to prevent upside down or mis-oriented insertion of the windows. Other means are provided to prevent students from removing indicators which are intended to be semi-fixed.

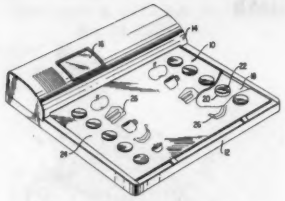
3,675,341

EDUCATIONAL DEVICE

Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan

Filed Sept. 17, 1970, Ser. No. 73,079
Claims priority, application Japan, March 18, 1970, 45/22811
Int. Cl. G09b 7/02
U.S. Cl. 35—9 B **2 Claims**

An educational device featuring a playing board possessing electrical insulation characteristics, bearing two rows of indicia to be matched by the user and provided with selected cut-out portions defining coded answer means to the matching of indicia in opposite rows, a housing adapted to receive the playing board and including individual actuating mechanisms located adjacent each indicia, a signal system and electrical circuit means within the housing energizing the signal system



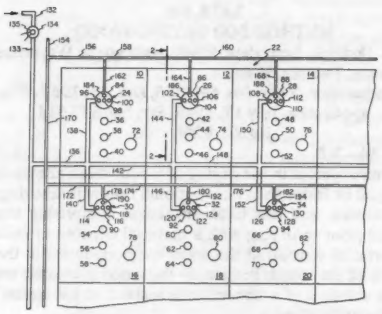
only as the actuating mechanisms adjacent matching indicia are operated by the user.

3,675,342

FIRE FIGHTING TRAINER

Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 9, 1971, Ser. No. 122,399
Int. Cl. G09b 9/00
U.S. Cl. 35—10 **9 Claims**



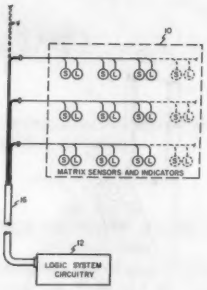
A fire fighting trainer comprising a matrix of adjacent fire simulation units of gas jets or lamps, each unit under the control of a processor circuit and sensor controls through which each of said units may be energized or de-energized to respective "on" and "off" conditions from a switch means through an activating circuit, to simulate an actual fire and through switch activating sensor means responsive to water spray or, in the alternative, to light rays to deactivate said actuating circuit and thereby said units. The processor also including a holding circuit and time delay means to permit automatic re-energizing of said activating circuit, indicating flashback, if the sensors are not activated for a selected time duration and otherwise to hold said activating circuit in de-energized condition. The processor circuit also including energy dissipation means for modifying the time period of said time delay means in accordance with the time interval between repeated sensor actuations prior to the establishment of a holding coil action and additional time delay means for simulating flashback from the effect of adjacent unextinguished units where all units are not extinguished in a given time period. A further aspect of the invention residing in the provision of multiple sensor means of selectively different sensitivity for each fire simulation unit to simulate progressive extinguishment of each simulation unit.

3,675,343

FIRE FIGHTING AND CONTROL SIMULATOR

Edmund Swiatosz, Maitland, and Walter S. Chambers, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 26, 1971, Ser. No. 137,293
Int. Cl. G09b 9/00
U.S. Cl. 35—10 6 Claims



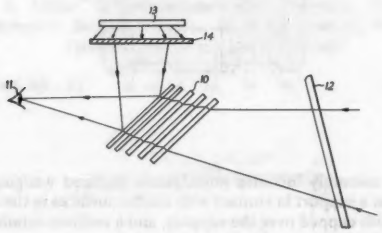
A simulator for training in fire fighting and control employing a plurality of modules arranged in a matrix of adjacent modules, each module employing a fire simulation unit, such as an electric lamp or gas burner energized to manually "on" condition with sensor and trigger circuit means for progressively deactivating the simulation units, time delay holding circuit means for maintaining deactivation of said units as the simulated fire is extinguished and interlocking logic circuitry with additional time delay means for limiting reflash capability of each "off" condition module fire simulation unit dependent upon the time duration of its exposure to "on" condition simulator units in adjacent modules.

3,675,344

CONTROLLED DEGRADATION OF A VISUAL SCENE

David Christopher Robert Williams, New Barnet, England, assignor to Thorn Electrical Components Limited, London, England

Filed Sept. 11, 1969, Ser. No. 857,153
Claims priority, application Great Britain, Sept. 11, 1968, 43,281/68
Int. Cl. B64g 7/00; G65h 9/08
U.S. Cl. 35—12 N 12 Claims



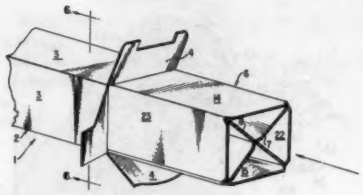
Apparatus for controllably degrading a visual scene suitable for use as a fog simulator in an aircraft comprises at least one transparent sheet positioned between a light receptor such as a pilot's eye and a scene and angled with respect to light from the scene so that light from a diffuse source is reflected by the sheet or sheets towards the receptor. A stack of spaced, parallel transparent sheets may be used. The brightness of the diffuse source may be varied to compensate for variations in ambient light, or the height or attitude of the aircraft.

3,675,345

BLOCK STRUCTURE WITH A REINFORCING FILLER

Andrew M. Abrams, Spring Valley, N.Y., assignor to Union Camp Corporation, Wayne, N.J.

Filed Nov. 3, 1970, Ser. No. 86,507
Int. Cl. A63h 33/04
U.S. Cl. 35—69 1 Claim



An educational block is formed by providing a light weight enclosed carton into which a reinforcing filler is inserted to give the block the necessary rigidity. The filler is formed by two blanks intersecting along an axis formed by the interfitting slots in the blanks, the filler presenting a cross-section of cruciform shape. The length of the filler is equal to the length of the carton. Each arm of the blank is folded along a score line extending from one end of the filler to the other end and parallel to the intersecting axis to form an end panel. The width of each end panel is so dimensioned that the panel extends from its score line to the score line of the adjacent arm when in folded position. The final cross-sectional shape of the assembled and folded blanks is that of a quadrilateral with its two intersecting diagonals. The end panels are dimensioned to be coextensive with the respective sides of the carton, whereby the sides of the carton maintain the folded portions of the blanks in their reinforcing position to form the filler formation which gives rigidity to the carton and block structure.

3,675,346

SANDAL

Kiyoichi Miyachi; Shinsuke Hashino, and Tomokazu Hongu, all of Fukuyama, Japan, assignors to Hiroshima Kasei, Ltd., Fukuyama-shi, Japan

Filed May 24, 1971, Ser. No. 146,313
Claims priority, application Japan, April 24, 1971, 46/31883
Int. Cl. A43b 3/12
U.S. Cl. 36—11.5 7 Claims

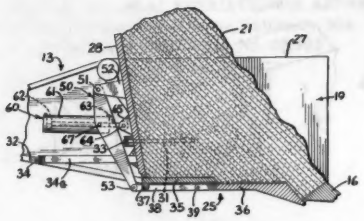
A sandal having a structure consisting of unfoamed surface layers, an internal closed-cell layer and intermediate open-cell layers. This improved sandal is produced by adding a foaming material comprising short lengths of fiber and a blowing agent to a thermoplastic resin, melting the resulting composition, forcing the melt into a fixed-cavity mold and cooling the melt to solidify.

3,675,347

EJECTOR AND FLOOR ACTUATING MEANS FOR SCRAPER

John F. Siewert, Peoria, and Dean A. Smith, Metamora, both of Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Jan. 19, 1971, Ser. No. 107,807
Int. Cl. E02f 3/85; B60p 1/16; E02f 3/64
U.S. Cl. 37—129 3 Claims



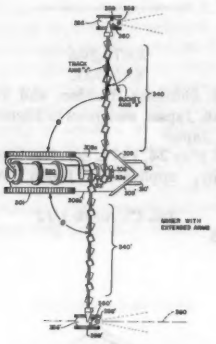
An actuating arrangement for a scraper having a movable ejector plate and movable floor section which includes a floating lever having its lower end coupled to the movable floor section and its upper end pivoted to the ejector plate and with an actuator interposed between the central portion of the lever and the ejector plate for automatic sequential movement of the floor section and ejector plate for discharge of the material in the scraper bowl.

3,675,348

SCRAPER BUCKET APPARATUS FOR DEEP SEA MINING SYSTEMS

Ernest Blaney Dane, Jr., 57 Taylor Road, Belmont, Mass.

Continuation-in-part of Ser. No. 754,191, Aug. 21, 1968, abandoned. This application June 1, 1971, Ser. No. 148,875
Int. Cl. E02f 3/14
U.S. Cl. 37—69 10 Claims



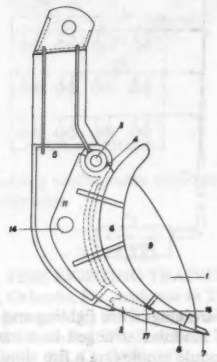
Scraper bucket apparatus for scraping loose ore sediment from a deep sea bed and delivering it to an undersea mining vehicle traveling the bed. The apparatus is embodied in a vertically flexible, long and foldable double tiered track carrying an endless chain with a series of scraper buckets attached that scrape the nodules and deliver them to the vehicle. To reduce crabbing, the buckets are skewed forward of the vehicle by an angle ϕ relative to the axis of the track. One end of the track is rotatably mounted on a tail sheave tractor driven along a course parallel to the vehicle and at a speed preferably to keep the track disposed at an angle of 90° relative to the negative of the vehicle's velocity vector.

3,675,349

RIPPING TOOL SUPPORTED SCOOP FOR EXCAVATOR

Dieter G. Luck, Johannesburg, South Africa, assignor to Orenstein and Koppel Limited, Johannesburg, South Africa

Filed June 25, 1970, Ser. No. 49,856
Claims priority, application South Africa, July 2, 1969, 69/4699
Int. Cl. E02f 3/76
U.S. Cl. 37—117.5 4 Claims



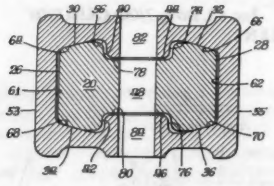
An excavator having a ripping tool secured thereto and a scoop detachably secured to and supported by the ripping tool, thereby avoiding the need to remove the ripping tool from the excavator when scoop operation is required.

3,675,350

DIPPER TOOTH ASSEMBLY

Harry W. Mulcahy, Lansing, and Thomas B. Russell, South Holland, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed April 13, 1970, Ser. No. 27,489
Int. Cl. E02f 9/28
U.S. Cl. 37—142 A 3 Claims



The assembly includes nonadjacent inclined wedging surfaces on a support in contact with similar surfaces in the cavity of a tooth capped over the support, and a resilient retainer pin to hold the wedging surfaces in contact.

3,675,351

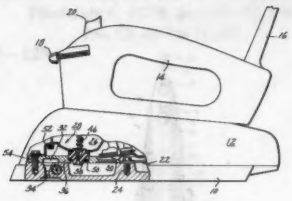
STEAM IRON AND VALVE STRUCTURE

Arthur C. Downing, Ontario, Calif., assignor to General Electric Company

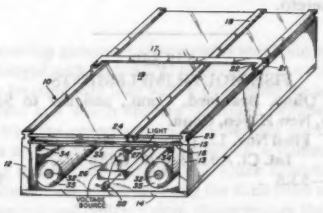
Filed Nov. 21, 1969, Ser. No. 878,840
Int. Cl. D06f 75/06
U.S. Cl. 38—77.83 2 Claims

The invention discloses a steam iron wherein the usual control valve, regulating water flow from the water tank to the

steam generating cavity, is of a non-metallic, low heat conductive material such as ceramic to eliminate the steam dome and result in better and faster steaming.

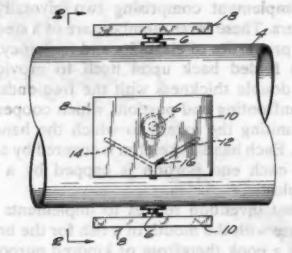


3,675,352
SONAR RANGE PREDICTION AND TACTICAL COMPUTER
Daniel Barron, 9326 Edmonston Road, Greenbelt, Md.
Filed Sept. 18, 1970, Ser. No. 73,321
Int. Cl. G09f *11/18*
U.S. Cl. 40—31 **3 Claims**



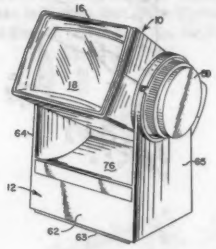
This disclosure is directed to a device for aiding a sonar operator in determining range to a target and then to utilize this information for determining optimum parameters for utilization of a particular tactic. The device includes environmental and equipment related information which is presented for ready observation though hand or mechanical operation of the device.

3,675,353
ADVERTISING SIGN FOR REVOLVING DRUM
Lee A. Miller, 927 Washington Blvd., Oshkosh, Wis., and Richard C. Zellmer, P.O. Box 75, Butte des Morts, Wis.
Filed Nov. 23, 1970, Ser. No. 91,900
Int. Cl. G09f *11/02*
U.S. Cl. 40—51 **3 Claims**



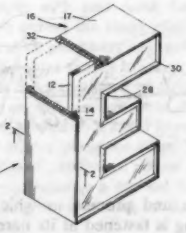
A drum rotatable on a generally horizontal axis (for example, a ready-mix concrete drum) is provided with one or more signs pivoted to its periphery and carrying an off-center weight which tends to hold the sign upright so that the legend thereon will be readable in all positions of the drum. Preferably, the weight is a liquid partially filling a tube tangent to the pivotal axis upon which the sign is mounted and so disposed with reference to the sign that the liquid can flow toward the bottom of the sign to hold the sign upright.

3,675,354
SLIDE VIEWER
Albert E. Webb, Glenview, Ill., assignor to General Aniline & Film Corporation, New York, N.Y.
Division of Ser. No. 718,581, April 3, 1968, abandoned. This application March 18, 1970, Ser. No. 20,746
Int. Cl. G09f *11/30*
U.S. Cl. 40—63 A **1 Claim**



The viewer contains adjustable magnification means including a movably mounted lens shiftable in either direction along the optical axis by a manually operated control knob, thereby adapting the viewer to accommodate slides having image bearing or transparency portions of varying sizes. The viewer is swingably mounted in a U-shaped stand or support. The viewer may be swung to a plurality of operative positions and also to an inverted position wherein the exposed or fixed lens of the viewer is disposed between the legs of the U-shaped stand adjacent the bight portion thereof.

3,675,355
MOLDING STRIP
Victor Shanok, and Jesse P. Shanok, both of Brooklyn, N.Y., assignors to Glass Laboratories Company, Brooklyn, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,732
Int. Cl. G09f *7/02*
U.S. Cl. 40—125 R **5 Claims**



This invention and this disclosure are directed to a molding strip and more particularly to a molding strip employed to support a translucent or transparent member. This disclosure is especially related to the use of the molding strip as a means of holding a translucent member wherein the strip is in a predetermined configuration, especially in the form of an alphabet letter outline. Thus, this invention's use resides primarily in the field of sign letters and mounting means therefor. The strip of this invention has a curved end to support an end of the translucent or transparent member and on the front viewable edge is provided with light-reflective material.

3,675,356

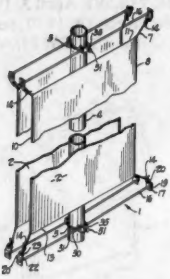
BANNER MOUNTING DEVICE

Harold J. Gilmoure, Shaker Heights, Ohio, assignor to Sales Promotion Products, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 761,647, Sept. 23, 1968, Pat. No. 3,564,743. This application Nov. 18, 1970, Ser. No. 90,649

Int. Cl. G09f 3/18

U.S. Cl. 40—145 5 Claims



A bracket for a banner mounting device which includes transverse members which hold the banner tensioned in a taut position, said bracket having open slot means for engaging the transverse member intermediate its length and holding the same in position when in use, under tension and subject to external forces such as result or may result from wind, storm, rain and changing temperatures.

3,675,357

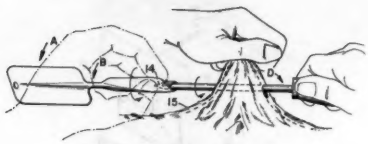
CATTLE IDENTIFICATION APPARATUS

Harry H. Magee, 1025 Lagonda Way, Danville, Calif.

Continuation-in-part of Ser. No. 794,516, Jan. 28, 1969, abandoned. This application Nov. 7, 1969, Ser. No. 874,740

Int. Cl. A01k 11/00

U.S. Cl. 40—300 1 Claim



An apparatus and process in which a bow tie shaped identification tag is fastened at its narrowed central portion through holes punched in the loose neck skin of a bovine.

3,675,358

FISHING LURE

Ferris E. Jones, 943 Millbury, La Puente, Calif.

Filed Aug. 26, 1970, Ser. No. 67,153

Int. Cl. A01k 85/00

U.S. Cl. 43—42.09 4 Claims

A composite fishing lure having separable interfitting bar and body parts releasably joined in a manner which permits either part to be easily replaced by a corresponding part of different color, color pattern, weight, shape, and/or size, adapted for a wide variety of fishing conditions. The body part is of channel shape to receive the bar therein and coupling rings

are secured to each end of the bar for attaching a fishing line and hook thereto.

3,675,359

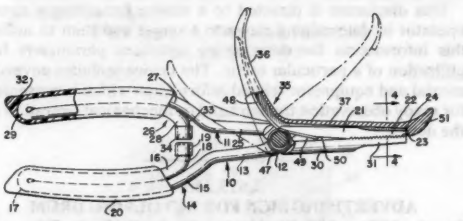
FISH MOUTH IMPLEMENTS

Richard J. Ohno, Branford, Conn., assignor to Sargent & Company, New Haven, Conn.

Filed Nov. 12, 1970, Ser. No. 88,638

Int. Cl. A01k 97/00; B25b 7/02

U.S. Cl. 43—53.5 14 Claims



This specification discloses several implements that are intended for use on the mouth of a fish for hook retrieving purposes. They are all characterized as being of the pliers type with each implement comprising two pivotally connected lever members. These lever members are of a steel rod having appreciable properties of elasticity and resiliency. One end of each rod is folded back upon itself to provide a handle skeleton of double thickness with the free ends of the rods bent into confronting end portions which cooperate as abutments for limiting the extent to which the handles may be compressed. Each handle skeleton is covered by a hand grip of plastic and each end portion is capped by a cup shaped member of plastic.

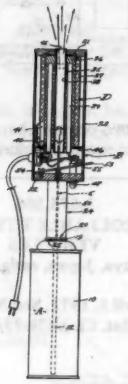
The present invention relates to implements that are intended for use with the mouth of a fish for the broad purpose of retrieving a hook therefrom or kindred purposes. The implements are all of the pliers type and the invention is concerned primarily with the construction of the lever elements which are pivotally connected and which provide handles on one side of the pivot.

3,675,360

FOG GENERATOR FOR INSECTICIDES AND THE LIKE

Ruth B. Pierce, 9077 East Fairview Avenue, San Gabriel, Calif.

Filed July 6, 1970, Ser. No. 52,174
Int. Cl. A01m *19/00*
U.S. Cl. 43—129 **33 Claims**



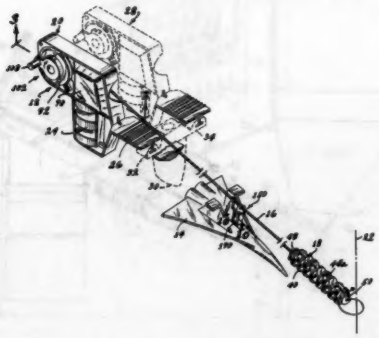
A gaseous fog generator connectably receiving aerosol containers charged with material to be liberated as a mist and subsequently treating said mist with a processing means applying heat thereto and which ensures thorough expansion of said material into the gaseous state. The aerosol container is attached to a shell for support and which accommodates the processing means that channels and which exposes mist nozzled therein to heat, while isolating the shell from said heat. A tubular control and delivery stem characterizes the invention, wherein this one member is both operable to depress the aerosol valve member for discharge of material and operable to transport said discharged material for liberation as a mist and subsequent processing before final delivery.

3,675,361

TOY SOUND PRODUCING FLIGHT SYSTEM

Floyd E. Schlau, Palos Verdes Estates; Denis V. Bosley, Palos Verdes Peninsula; Philip W. Crain, Redondo Beach, and Raymond J. Douglas, Lomita, all of Calif., assignors to Mattel, Inc., Hawthrone, Calif.

Filed Jan. 20, 1971, Ser. No. 108,114
Int. Cl. A63h *27/04*
U.S. Cl. 46—1 H **8 Claims**



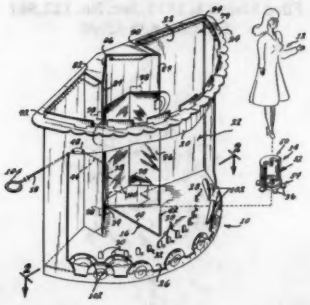
A toy sound system, including a reel-sound amplification mechanism apparatus, a toy airplane, a hanger and a sound-inducing filament. Movement of the airplane suspended by the hanger from the filament causes a motion to be induced in the filament which in turn induces a movement of a diaphragm thereby amplifying the sound made. The reel apparatus allows the filament to be paid out to any desired length. The reel may then be locked to prevent further payout. Controlling the reel apparatus allows control of the descending airplane since the far end of the filament is connected to an anchor with a flexible connector which allows movement and yet is easy to attach, while providing a bumper against impact of the airplane and the anchor.

3,675,362

DOLL DISPLAY STAGE WITH MOVABLE DOLL SUPPORT

Jacob de Gelder, Torrance, and Gary E. Phillips, Encino, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 9, 1970, Ser. No. 96,510
Int. Cl. A63h *7/00*
U.S. Cl. 46—13 **7 Claims**



A stage for displaying a fashion doll, which is economical, capable of compact packaging, and easily used by a child, comprising a frame with a platform along which the doll can move. A cardboard strip with gear teeth formed along one edge extends in an arc across the stage platform, and a doll holder with gear teeth at its periphery engages the teeth of the strip, so that as the doll holder moves in an arc across the stage it rotates to display the front and back of clothes worn by the doll. The doll holder is rotatably mounted at the outer end of a long arm which can be moved by a child from the side of the stage to move the doll holder along the stage. The stage frame is formed by a wide strip of cardboard whose ends are joined, one portion of the strip forming a curved front wall of the stage and the rest forming the rear wall, so that the frame can be stored as a flat package.

3,675,363

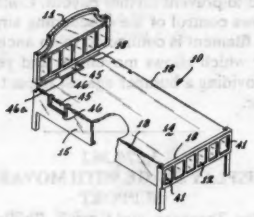
FOLDABLE TOYS

Michael Colin Mills, Middlesex, N.J., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 9, 1969, Ser. No. 865,112
Int. Cl. A63h *3/52*
U.S. Cl. 46—15 **1 Claim**

A foldable toy for simulating full size structures such as furniture and houses. The device is formed of a suitable plastic in a unitary planar configuration and provided with integral hinge or fold lines and integral connecting or joining members

thus enabling the toy to be continuously folded into its intended folded configuration and unfolded back into its planar



configuration without damage to the fold lines and connecting or joining members.

3,675,364
PIN WHEEL TOY

Arthur Halpern, New York, N.Y., assignor to M. I. Sales Co., Inc., New York, N.Y.

Filed March 1, 1971, Ser. No. 122,581
Int. Cl. A63h *33/40*
U.S. Cl. 46—58 **10 Claims**

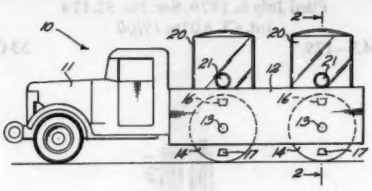
This toy comprises a long handle having its upper end frictionally inserted in a radial socket integrally formed with a circular ring provided with a plurality of integral radial spokes, one of which extends to the socket. The radial spokes and the socket extend beyond the ring and carry forwardly extending pins on which plastic pin wheels are freely rotatably mounted. Ornamental cups are frictionally fitted on the pins to hold the pin wheels on said pins. A pin at the axis of the ring has a central pin wheel rotatably mounted thereon, which pin wheel is also kept from coming off the pin by a frictionally fitted cup.

3,675,365
MAGNETIC TOY

Ruben Silva, 1709 Church Street, Barstow, Calif.

Filed Aug. 5, 1970, Ser. No. 61,363
Int. Cl. A63h *33/26*
U.S. Cl. 46—239 **7 Claims**

This invention discloses a magnetic toy having wheels or other rotating member carrying varying magnetic fields and an encapsulated bar magnet above the wheels freely enclosed by a transparent tank enclosure. The varying magnetic fields are

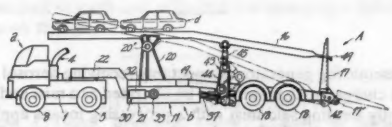


created by disposing two or more bar magnets parallel to the axis of the wheel and in reversed polarity.

3,675,366
REMOTELY CONTROLLABLE TOY TRANSPORTER FOR VEHICLES

Eijiro Tomiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed April 5, 1971, Ser. No. 131,100
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 A **9 Claims**

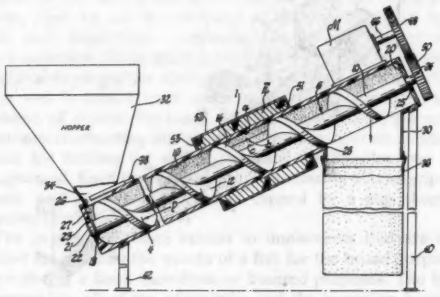


An electrically actuated and remotely controllable toy transporter for vehicles which comprises, in combination, a tractor trailer unit, a trailer adapted to travel with, or trail behind, the tractor trailer unit, and a manually operable electric remote-control device for remotely controlling the tractor and/or the trailer. One of the principal features of the present toy consists in that the trailer can be hooked up with and unhooked from the tractor by manipulation of the remote-control device. Also, another principal feature is that the trailer is equipped with electrically actuated and remotely controllable means for loading and unloading the vehicles.

3,675,367
APPARATUS FOR MAGNETICALLY TREATING SEEDS

Raymond D. Amburn, 11420 Canal Road, Sterling Heights, Mich.

Continuation-in-part of Ser. No. 740,572, June 27, 1968, abandoned. This application July 27, 1970, Ser. No. 58,484
Int. Cl. A01g *7/04*; **A01c** *1/00*
U.S. Cl. 47—1.3 **64 Claims**



Apparatus for magnetically treating seeds comprising a magnet for producing a magnetic field and a conduit for seeds

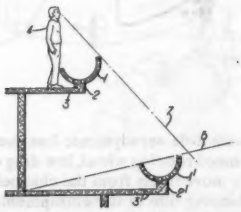
extending through the magnetic field and having a fixed directional relationship with respect to the magnetic field. The seeds are caused to roll and tumble as they pass through the magnetic field in the conduit so that each seed is oriented in a multiplicity of positions with respect to the magnetic field during its movement through the magnetic field to thereby reduce the exposure time necessary to induce magnetism in the seeds.

3,675,368

RAILING FOR TERRACES OR BALCONIES

Per Eirik Nustad, Oslo, Norway, assignor to A/S Selvaagbygg, Oslo, Norway

Filed Feb. 16, 1971, Ser. No. 115,471
Claims priority, application Norway, Feb. 16, 1970, 532/70
Int. Cl. A01g *9/02*
U.S. Cl. 47—34 **5 Claims**



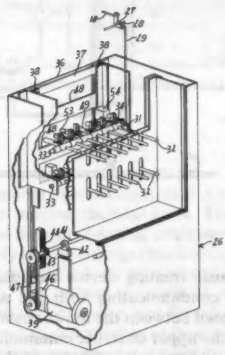
This disclosure relates to a balcony or terrace railing which doubles as a planter. The railing is so designed that it achieves maximum strength with minimum bulk.

3,675,369

APPARATUS FOR SELECTING AND CONTROLLING THE OPERATION OF CELL DOORS

Tommy L. Lentz, Trinity, and Alton L. Terry, Decatur, both of Ala., assignors to Decatur Iron and Steel Company

Filed March 3, 1971, Ser. No. 120,553
Int. Cl. E05f *15/14, 17/00*
U.S. Cl. 49—20 **6 Claims**



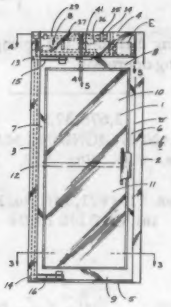
Apparatus for remotely engaging and disengaging a cell door from operating mechanism therefor and for locking the door in closed or open position. Specifically, the apparatus comprises a remotely controlled electro magnetic selector associated with the door effective when energized to ready the door for movement by the drive mechanism. The improvement may be associated with manual selector devices without affecting the construction or operability of the latter.

3,675,370

AUTOMATIC BALANCED DOOR WITH CONCEALED DRIVE

John C. Catlett, Memphis, Tenn., assignor to James R. Gilson, Memphis, Tenn. and Sam Horwitz, Chicago, Ill., part interest to each

Filed June 1, 1970, Ser. No. 41,850
Int. Cl. E05d *15/28*; E05f *15/12*
U.S. Cl. 49—253 **10 Claims**



An automatic balanced door comprising in combination a door frame having a header, a door having a balanced hinge arrangement provided within said frame and including a main hinge shaft and a power operator provided within said header. Motion transmitting means located within said header connecting said power operator and said main hinge shaft. A latch assembly operable responsive to movement of the customary guide roller; said latch assembly being connected to the motor unit and being disposed within said header. A block demountably disposed upon said door leaf and carrying said guide roller for displacement from said door when the latter is caused to swing in a direction opposite from that intended.

3,675,371

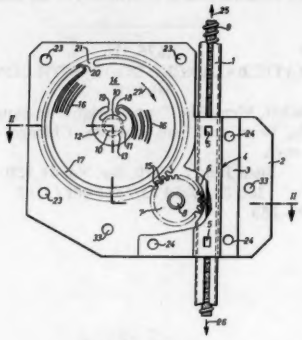
SPRING CLOSEABLE WINDOW OPERATING MECHANISM

Hans Golde, Frankfurt (Main); Friedrich Herrmann, Dornigheim; Herbert Kouth, Kilianstadten; Fritz Marr, Offenbach (Main), all of Germany, assignors to Firma H. T. Golde GmbH, Frankfurt Main, Germany

Filed June 18, 1970, Ser. No. 47,283
Claims priority, application Germany, June 20, 1969, P 19 31 471.7
Int. Cl. E05f *11/40*
U.S. Cl. 49—352 **4 Claims**

An operating mechanism, particularly for the windows of motor vehicles, includes a flexible threaded cable which is mounted in a tubular portion formed by two housing parts which are interconnected. The cable is engaged by a driving gear which is driven from a pinion gear which is affixed to a shaft for rotation therewith. The shaft is driven through a spline gear, for example, by a manually operated crank handle or by a driving motor. The pinion gear also meshes with a gear formed on the exterior of a spring pulley. The spring pulley houses at its interior a coil spring which is tensioned or wound

during the driving of the motor to move the window operating cable in an opening direction. During the driving of the cable



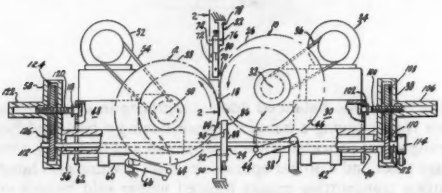
in an opposite closing direction the spring therefore unwinds and aids in the driving operation.

3,675,372

CLEARANCE GRINDING MACHINE

Anthony Kushigian, P.O. Box 512, 25804 Novi Road, Northville, Mich.

Filed Jan. 11, 1971, Ser. No. 105,182
Int. Cl. B24b *19/04*
U.S. Cl. 51—5 **15 Claims**



An automatic clearance grinding machine for helically fluted drills wherein a pair of opposed grinding wheels are arranged to simultaneously grind opposed lands of the drill. One grinding wheel is mounted with its rotational axis spaced above the drill axis by a vertical distance substantially equal to one-half the vertical distance between the drill axis and a pivoted diamond point used for dressing the wheel. The other grinding wheel is mounted with its rotational axis spaced below the drill axis by a distance substantially equal to one-half the vertical distance between the drill axis and a second pivoted diamond point used to dress the other wheel. Both diamond dressers are mounted at a location fixed relative to the drill axis. The two grinding wheels are mounted on respective horizontal slides. During a dressing operation, the slides move the grinding wheel axes along respective horizontal paths located substantially midway between the drill axis and the dresser associated with the respective wheel.

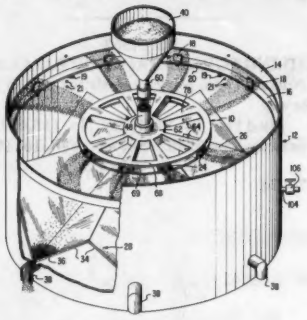
3,675,373

FREE PARTICLE IMPACT MACHINING PROCESS AND APPARATUS EMPLOYING THE SAME

David T. Putnam, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1970, Ser. No. 41,416
Int. Cl. B24c *3/00*
U.S. Cl. 51—9 **13 Claims**

An enclosed chamber carries a high speed rotating abrasive throwing wheel which discharges, by centrifugal force, abrasive particles through radially extending channels against a circumferential array of workpieces requiring machining, and positioned in the path of the high speed abrasive particles. The chamber is subjected to vacuum pressure or a low density atmosphere, with little aerodynamic loss due to windage effects on the high speed rotating wheel, low drag on the abrasive particles as they move freely from the channels to the work piece and no cushioning due to the entrapment of air between the particles and the workpiece.

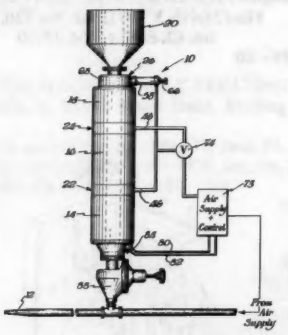


3,675,374

DIRECT PRESSURE TREATING DEVICE

Harvey H. Wilder, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,927
Int. Cl. B24c *3/00*
U.S. Cl. 51—12 **9 Claims**



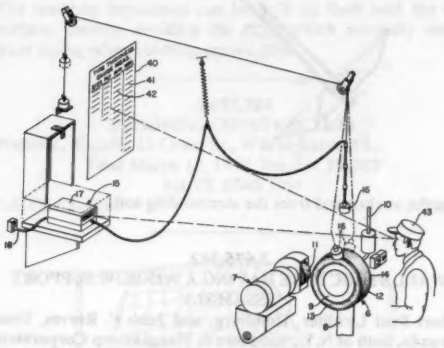
A direct pressure treating device includes a nozzle and a lower chamber communicating with the nozzle. A middle chamber is disposed between the lower chamber and an upper chamber, while the upper chamber communicates with a feed hopper. A first valve is arranged between the lower and middle chamber, a second valve is between the middle and upper chambers, and a third valve is between the upper chamber and feed hopper. At least one of these valve is diaphragm operated with the diaphragm being arranged in a closed housing and disposed in such a manner as to overcome the force of sealing means for thereby opening the valve.

3,675,375

METHOD FOR MEASURING THE THICKNESS OF BUFFED TIRES

Robert S. Enabnit, and Merritt W. Wolfe, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed March 11, 1971, Ser. No. 123,205
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 R 25 Claims



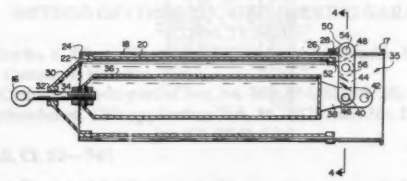
A method for measuring the buffed thickness of a tire being prepared for retreading. A metal proximity transducer, on the outer buffed surface of the tire, is periodically used to measure the distance between the transducer and a reference as a means for determining whether a sufficient amount of rubber has been removed and the remaining tire casing is ready for retreading.

3,675,376

THERMAL COMPENSATING STRUCTURAL MEMBER

Robert R. Belew, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 12, 1971, Ser. No. 114,847
Int. Cl. E04c *3/00*; G04b *17/20*
U.S. Cl. 52—1 7 Claims



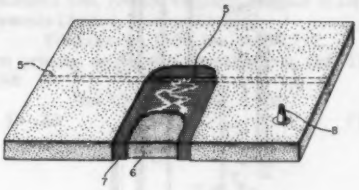
A structural member that remains near a constant length when subjected to varying thermal loads. The structure includes an outer bi-metallic housing composed of inner and outer concentrically spaced casings attached to one another at one of their ends and left free to expand and contract at the other of their ends. The casings are made of materials having different coefficients of expansion and therefore their lengths will vary with respect to one another as their thermal environment changes. A compensator strut is slidably mounted in the outer housing. A compensating drive linkage mounted on the free ends of the inner and outer casings so as to be rotated by relative movement between the casings is connected to the strut and causes sliding movement thereof to maintain the structure at a constant length when the components thereof change lengths due to expansion and contraction.

3,675,377

INFLATABLE-DEFLATABLE FLEXIBLE STRUCTURAL COMPONENT

Charles A. Suter, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 2, 1970, Ser. No. 69,076
Int. Cl. E04b *1/343*; E04g *9/08*; B32b *3/08*
U.S. Cl. 52—2 3 Claims



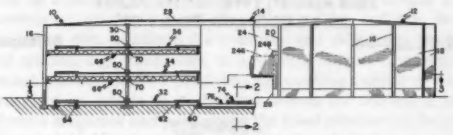
An inflatable-deflatable flexible structural component comprising a flexible foam core portion having a fabric covering, the fabric being sealed against loss of air by a flexible elastomeric coating.

3,675,378

MULTI-LEVEL AUTOMATIC STORAGE AND RECOVERY SYSTEM FOR AIRCRAFT

Malcolm A. Neumann, San Diego, and Arnold Hunsberger, Delizura, both of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed June 11, 1970, Ser. No. 45,310
Int. Cl. E04h *6/06*
U.S. Cl. 52—65 8 Claims



A storage facility having a plurality of multi-level, non-rotatable, support frames, and rotatable spider frames with circumferentially spaced aircraft storage stalls peripherally supported on the support frames for communication with an elevator that has a turntable for aligning an aircraft with a selected stall, and individual, aircraft-carrying, wheeled pallets being moved by a power tractor on rails by an automatic control system to and from an external loading dock to and from the selected stalls in a series of sequential steps that are initiated by coded signals identifying each aircraft with each stall.

3,675,379

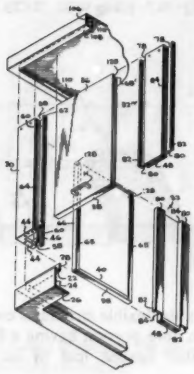
WEATHERPROOF ENCLOSURE

Kenneth W. Lambert, Bridgewater, and Donald W. Krichbaum, Staunton, both of Va., assignors to Dunham-Bush, Inc., Harrisonburg, Va.

Filed June 5, 1970, Ser. No. 43,799
Int. Cl. E04h *1/12, 5/04*
U.S. Cl. 52—79 13 Claims

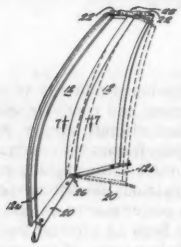
A weather-proof enclosure formed with a plurality of vertically extending posts and wall panel members in which the posts and wall panel members have mating groove and lug connections along each end and are overlapped at their upper end by a top cover member with all of the component connections being made from the interior of the enclosure in order that a weatherproof construction is achieved; another feature

of the invention resides in the top construction which is in the form of two portions joined along a transversely extending line by an L-shaped channel on one portion matingly receiving a



downwardly extending similarly shaped flange on the other portion with an elastomeric sealing member being located between the flanges.

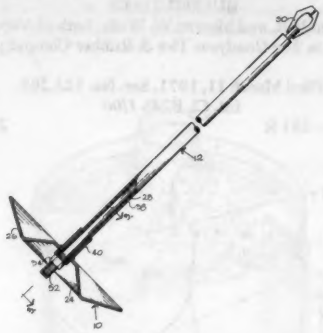
3,675,380
PREFABRICATED DOME-TYPE SHELTER
Charles W. Moss, Ann Arbor, Mich., assignor to Tension Structures Inc., Milan, Mich.
Filed April 27, 1970, Ser. No. 32,051
Int. Cl. E04b *1/32*; E04h *1/02*
U.S. Cl. 52—80 **6 Claims**



A shelter which has panels bowed and secured together in a stressed condition to define a dome-like building. An improved flexible joint is provided between the panels to aid in erecting and in retaining the structure together, and to provide a weather seal. A method of erecting the shelter and inserting the flexible joints in place is disclosed.

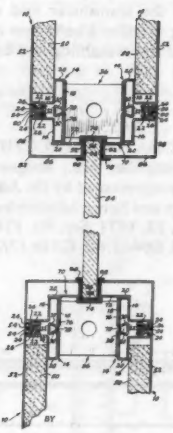
3,675,381
PROTECTION OF ANCHOR RODS AGAINST CORROSION
Gary Q. Watson, P. O. Box 283, Crane, Tex.
Filed Sept. 21, 1970, Ser. No. 73,872
Int. Cl. E02d *5/80*
U.S. Cl. 52—166 **3 Claims**

Rods for connecting anchors to guy wires and the like are protected against corrosion by electrically insulating the rod



from the anchor and from the surrounding soil.

3,675,382
WALL STRUCTURE HAVING A WINDOW SUPPORT ASSEMBLY
Robert Paul Lickliter, Hamburg, and John F. Reeves, Tonawanda, both of N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.
Filed March 10, 1970, Ser. No. 18,070
Int. Cl. E06b *1/18, 1/36*
U.S. Cl. 52—214 **6 Claims**



A window support assembly incorporated in a wall construction having a pair of elongated opposed panel connectors maintained in spaced apart relation by spacer clips. Window support clips interlock with the panel connectors at spaced intervals lengthwise thereof. Each support clip has a medial channel portion for receiving portions of window frame trim plates which define a groove for receiving an elastic sealing strip and the marginal edge portions of a window panel.

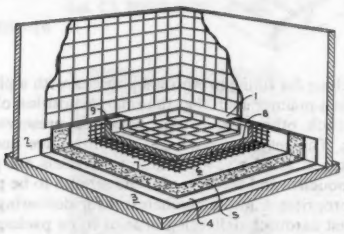
3,675,383
WALLBOARD CONSTRUCTION
John P. Paoletti, 306 Buddington Road, Huntington, Conn.
Filed April 15, 1970, Ser. No. 28,575
Int. Cl. E04b *2/70*
U.S. Cl. 52—222 **5 Claims**

There is disclosed a type of wallboard construction wherein the butt joint between adjacent panels is formed between,

rather than on, the joists. The abutting edges are secured by a clip designed to bias the edges inwardly between the joists.

The resulting depression can be built up flush with the wall surface, thereby avoiding the ridge which normally results from taping edges abutting upon a joist.

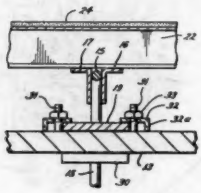
3,675,384
FLOORING CONSTRUCTION
Walter L. Knecht, 51 Cedar St., Wilkes-Barre, Pa.
Filed March 13, 1970, Ser. No. 19,383
Int. Cl. E04b *1/64*
U.S. Cl. 52—250 **5 Claims**



A floor construction is provided which may be used as original installation or in the repair of leaking shower stalls, etc. The floor construction comprises a metal angle, placed at the bottom of the shower stall walls, and succeeding layers of asphalt mastic, waterproof fibrous material, wire lath, mortar and tile.

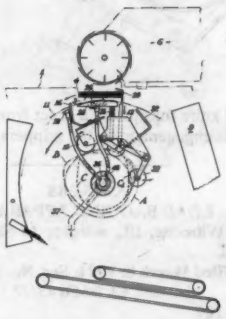
Also provided in connection with the repair of leaking shower stalls is a method for raising the drain so as to compensate for the raised level of the floor.

3,675,385
METHOD OF CONSTRUCTING PARKING GARAGE STRUCTURES
Charles S. Chan, Houston, Tex., assignor to Metallic Building Company, Houston, Tex.
Continuation-in-part of Ser. No. 808,854, March 20, 1969, abandoned. This application Feb. 16, 1970, Ser. No. 11,466
Int. Cl. E04h *6/08*
U.S. Cl. 52—741 **1 Claim**



The structure includes a plurality of horizontal primary beams, a series of joists supported between the primary beams, and a metal deck formed by laying deck formed of beams or members across the joists in a side-by-side manner. Releasable clamping and fastening devices are used for fastening the joists to the primary beams and the deck to the joists The joints between the deck members are waterproofed with a sealant material and a chemical-repellent waterproof friction coating is bonded to the upper surface of the metal deck. The invention also contemplates a metal deck arrangement which can be employed in a conventional concrete garage construction.

3,675,386
ARTICLE BANDING MACHINES
Victor Richard Sels, Sidcup, England, assignor to De La Rue Instruments Limited, London, England
Filed Oct. 14, 1970, Ser. No. 80,712
Claims priority, application Great Britain, Oct. 17, 1969, 51,194/69
Int. Cl. B65b *27/08, 57/06*
U.S. Cl. 53—63 **12 Claims**

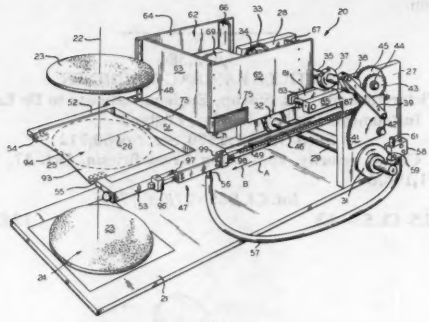


This invention relates to banding machines of the kind capable of automatically applying a wrapping band around a flat article or articles, e.g., stacks of banknotes, and may be integrated with machines for counting and delivering numbers of articles, e.g., banknotes, to a banding station. The banding machines comprises a platform, the working surface of which receives an article to be banded, means for feeding a band from a magazine and positioning the band adjacent to the platform, yieldably mounted support means adapted to move adjacent said platform, reciprocable constant-stroke gripper means adapted to transfer the article from the working surface to the support means with the band therebetween, and thereafter to move to the limit of its stroke thereby to grip both the article and the band, and means for bringing together and uniting the two ends of the band. The components of the machine preferably move in a rotary manner through band-loading, article-loading, band-uniting, and banded-article-delivery stations.

3,675,387
PAPER INTERLEAVER DEVICE
Henry N. Lekan, Chicago, Ill., assignor to Formax, Inc., Mokena, Ill.
Filed Nov. 18, 1970, Ser. No. 90,563
Int. Cl. B65b *25/08, 35/50, 41/06*
U.S. Cl. 53—157 **17 Claims**

A device for interleaving individual thin, flexible sheets of paper or similar material with a series of relatively thick flat articles (e.g., hamburger patties) as those articles fall along a defined stacking path terminating at a stacking position, comprising a carriage with grippers for pulling each flexible sheet from a support and across a shaping member that bends the sheet sufficiently so that the sheet becomes self-supporting as a cantilever member. The carriage takes the sheet to an interleaving position on the stacking path, where one of the articles engages the sheet and carries it to the stacking position. The grippers release the cantilever sheet at about the time the sheet is engaged by the moving article; the carriage then

returns for the next sheet. The sheet supply may comprise a hopper with stacked pre-cut sheets, or may constitute a



synchronized knife for cutting a sheet from a continuous web just prior to its engagement by the grippers.

3,675,388

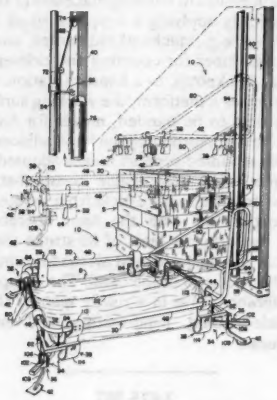
LOAD BAGGING APPARATUS

Peter Lems, Wilmette, Ill., assignor to Signode Corporation, Chicago, Ill.

Filed March 8, 1971, Ser. No. 121,706

Int. Cl. B65b *43/28*

U.S. Cl. 53—187 **9 Claims**



A semi-automatic apparatus for facilitating the application of an inverted plastic film bag to a rectangular stack of articles, the stack presenting irregular side faces. An open rectangular frame is mounted for vertical movement between approximate floor level and above-the-stack level. A bag loaded on the frame at floor level is carried upwardly with the frame, aligned vertically with the stack, and then pulled downwardly over the stack, as the frame descends, by means of a series of four jaw-type gripper units which are floatingly mounted at the corners of the frame and maintain the rim of the bag in an open condition. During descent of the frame a series of cams ride against the sides of the stack, compound their motion, and transmit it to the gripper units in such a manner that a clearance is at all times maintained between the open rim of the bag and the sides of the stack.

3,675,389

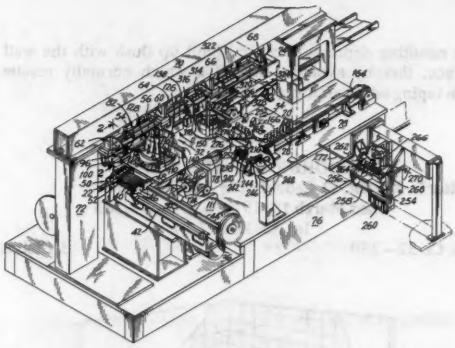
MACHINE FOR FILLING PREFORMED POUCHES

Lawrence James Uline, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,483

Int. Cl. B65b *5/08*

U.S. Cl. 53—183 **14 Claims**



A machine for filling preformed pouches with a plurality of articles in a manner such that the relative position of the articles to each other and to the pouch is preserved during handling. The resulting packages are attractive and protect the packaged articles. Two rotating carousels are provided, one for pouches and the other for the articles to be packaged, with appropriate transfer mechanisms for delivering pouches to the first carousel, delivering articles to be packaged to the second carousel, transferring pouches from the first carousel to the articles of the second carousel, and transferring pouches with articles contained therein from the second carousel at an appropriate discharge station. Means are also provided for orienting the articles prior to packaging in a manner such that indicia contained on the labels of the articles are oriented to face in a predetermined desired direction.

3,675,390

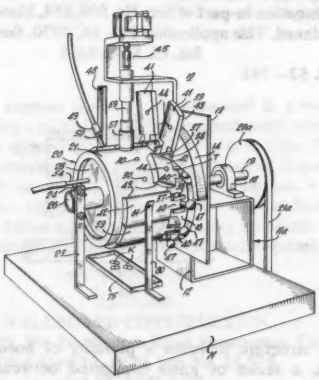
CAPSULE FILLING APPARATUS

Leonard H. Austin, Lynbrook, N.Y., assignor to Ansaks Industries, Inc., Lynbrook, N.Y.

Filed July 31, 1970, Ser. No. 59,951

Int. Cl. B65b *1/06, 1/12*

U.S. Cl. 53—282 **20 Claims**



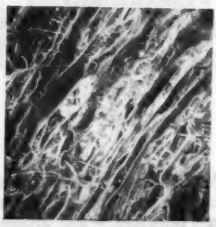
A capsule filling machine includes a rotating drum having circumferentially spaced single or longitudinal rows of first

capsule openings and capsule opening arms having corresponding rows of second larger diameter capsule openings and pivoted to an end of the drum and having followers which cooperate with a cam to retract successive arms after a capsule feed station and advance the arms through a filling station and then to a closed position with first and second openings in adjacent alignment. Before the retraction of the arms closed capsules are fed to the second openings and suction is applied to the drum underface to separate and draw the capsule lower halves into the first openings. The arms are retracted to separate the capsules, the drum-carried capsules filled, the arms closed, the capsules closed by a pusher member entering the first opening while the second opening is blocked and ejector fingers then discharge the closed filled capsules from the drum and arms.

3,675,391
BREATHABLE WATERPROOF FABRIC

Lawrence Vincent Gallacher, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 820,761, May 1, 1969, abandoned. This application March 4, 1971, Ser. No. 121,094
Int. Cl. B01d *39/16, 49/00;*
U.S. Cl. 55—16 **7 Claims**

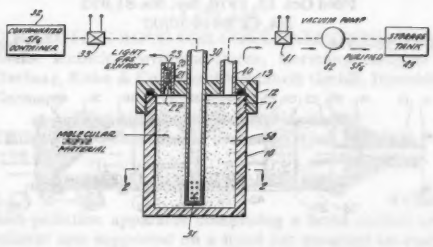


A breathable-waterproof material is given wherein an extensively fibrillated thermoplastic resin material is formed which permits high water vapor transmission levels while substantially precluding liquid water penetration.

3,675,392
ADSORPTION-DESORPTION METHOD FOR PURIFYING SF_6

David H. Reighter, Roslyn, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Jan. 30, 1970, Ser. No. 6,998
Int. Cl. B01d *53/14*
U.S. Cl. 55—25 **3 Claims**

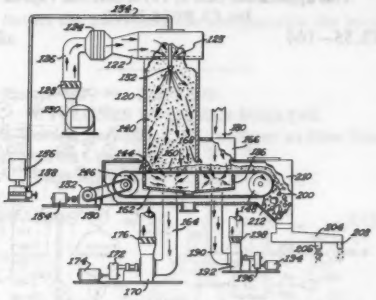


A clear, transparent container is filled with a molecular sieve of 10 angstrom pore size. A vacuum is drawn on the interior of the container to extract purified SF_6 therefrom. Contaminated SF_6 is then loaded into the evacuated sieve for the next purifying cycle. A light gas exhaust valve is provided at the top of the container. When the sieve is loaded with moisture and contaminants, the molecular sieve material is replaced.

3,675,393
DUST COLLECTING PROCESS

Reginald E. Meade, Stillwater, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 749,707, Aug. 2, 1968, abandoned. This application Feb. 20, 1970, Ser. No. 13,147
Int. Cl. B01d *46/00*
U.S. Cl. 55—96 **11 Claims**

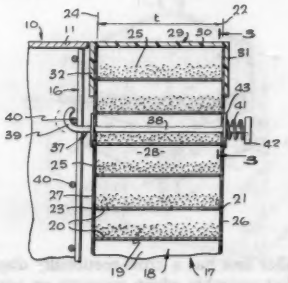


Prior dust filters exhibit an undesirable back pressure across the filter screen after a short period of operation. In the present invention droplets of liquid are introduced to a moving stream of gas that contains dust. The droplets make the dust particles cohere in three ways: (a) by the wetting of their surfaces; (b) dissolving potentially tacky solubles contained in the dust; and (c) by the deposition of an adhesive contained in the droplets of liquid but insufficient liquid is introduced to cause the particles to coalesce. A porous collecting element such as a woven metal screen extends entirely across the air stream. The air stream is forced through the collecting element while the particles are in a tacky coherent condition. The mat of dust particles which forms on the surface of the collecting member is maintained in a highly porous condition because the bonds that form between the dust particles hold the particles apart. The mat of dust itself acts as the filter medium. It is self-supporting, often friable and offers much less resistance to the flow of gas than the same dust particles in an unbonded condition.

3,675,394
GAS SEPARATING DEVICE

Eugene L. Sterrett, 2835 Leticia Drive, Hacienda Heights, Calif.

Filed June 18, 1970, Ser. No. 47,230
Int. Cl. B01d *39/02, 46/30*
U.S. Cl. 55—518 **17 Claims**



A device for separating one or more selected gases from a stream of air or another gas, said device including a cellular

honeycomb type structure having a large number of compartments or cells partially filled with a granular gas removing substance, with the granular material being retained in the cells by screening disposed across opposite ends thereof.

3,675,395

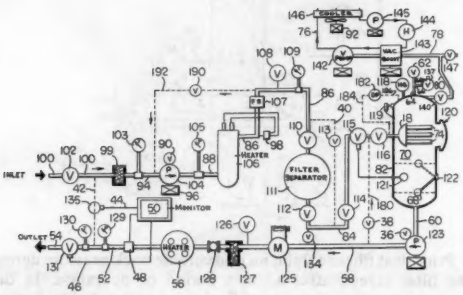
APPARATUS FOR THE PURIFICATION OF OILS AND THE LIKE

Leslie B. Baranowski, Cookeville, Tenn., assignor to Keene Corporation, New York, N.Y.

Division of Ser. No. 789,898, Jan. 8, 1969, Pat. No. 3,561,193. This application Oct. 9, 1970, Ser. No. 79,542

Int. Cl. B01d *19/00*

U.S. Cl. 55—164 **2 Claims**



An apparatus providing for a process for the purification of electrical insulating liquids such as transformer oils, lubricating oils, and hydraulic oils containing water, air, and gases having the steps of transferring the oil to heater for raising the temperature of the oil approximately 40° F. above the inlet temperature, then passing the oil through a filter-separator for removing the free water and solid contaminant, then passing the oil through a vacuum degasifier for removing the remaining impurities such as gases, air, and water vapor, metering the purified oil and returning the oil to the place of intended use.

3,675,396

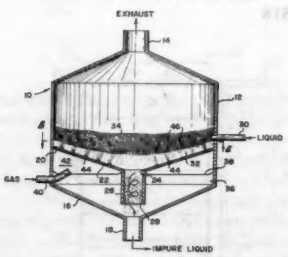
GAS PURIFIER UNIT

Alexandra S. Hawryluk, and John Hawryluk, both of Marlton, N.J., assignors to Control Research Products, Inc.

Continuation-in-part of Ser. No. 737,206, June 14, 1968, abandoned. This application May 5, 1970, Ser. No. 34,763

Int. Cl. B01d *47/00*

U.S. Cl. 55—225 **11 Claims**



A gas purifier unit has a cross-sectionally disposed baffle and gas pocket assembly which supports an upper body of cleansing fluid above it and holds a gas pocket immediately below, the gas pocket being disposed above a lower body of cleansing fluid, and the upper surface of the baffle and gas pocket assembly having closely spaced openings through which angularly disposed streams of gas issue and pass upwardly through the upper body of cleansing liquid, losing impurities in their travel.

3,675,397

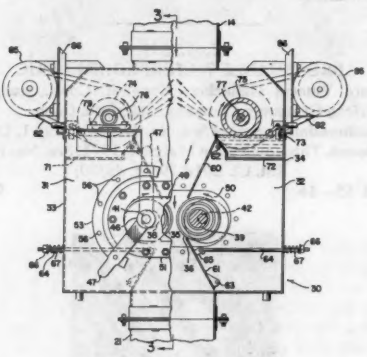
METHOD AND APPARATUS FOR REMOVING ENTRAINED DUST PARTICLES FROM A GASEOUS STREAM

James S. Deacon, 4492 Camellia Lane, North Olmsted, Ohio

Filed Dec. 9, 1970, Ser. No. 96,303

Int. Cl. B01d *47/10*

U.S. Cl. 55—227 **6 Claims**



An apparatus for removing entrained solid particles from a gaseous stream using a wet-type dust collection system embodying the venturi principle. Water droplets are introduced into the particle laden gaseous stream upstream of the venturi throat by means of rotating drums having a lower surface portion immersed in a water trough. The rotating drums pick up water on their surfaces and propel small droplets tangentially outward in the form of a spray. The venturi throat is defined in part by a pair of rollers journaled for free rotation and having parallel axes spaced so that adjacent surfaces of the rollers define between them a restriction. The force of surface friction between the roller surfaces and the moving stream causes free rotation of the rollers thus reducing frictional resistance to stream flow and distributing erosion over a relatively large area.

3,675,398

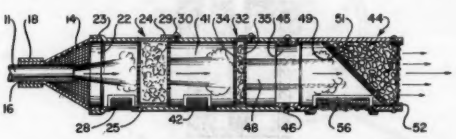
EXHAUST FILTER ATTACHMENT

Lawrence P. Giarrizzo, c/o DeCesario 29 Jerome Ave., Hicksville, N.Y.

Filed Oct. 15, 1970, Ser. No. 81,092

Int. Cl. B01d *50/00*

U.S. Cl. 55—316 **5 Claims**



An exhaust filter attachment adapted to be attached to the exhaust pipe and carried rigidly thereon of any motored vehicle. This attachment is designed to filter all products of combustion leaving the vehicle, and to chemically treat the poisonous and health destructive gases; such as, the carbon monoxide and sulphur. The attachment comprises generally a

sleeve housing with a conical mesh member extending from the forward end of the sleeve housing, and having thereon an attaching sleeve that will be secured to the end of the exhaust pipe by a clamp ring. Air is drawn inwardly or injected by the exhaust action of the gases being expelled from the exhaust pipe, and the mixture will be forced through a series of removable filter members extending transversly of the flow of the gases within the tube. Each of the filter elements comprises rings with filter material disposed between mesh disc end closures. When the filtering elements have been used they can be replaced or cleaned. The filtering material in these elements is chemically treated to consume the poisonous gases, reacting therewith to convert them into non-harmful gases. A charcoal device attachment is provided to be mounted on the sleeve, at the end thereof, and has an incline disc supporting charcoal particles in various degrees of longitudinal extent from the bottom to the top of the filter device so as not to seriously impede the flow of gases at the trailing end of the filtering attachment. Adequate drain mesh screens are provided in the spaces between the filtering elements and the charcoal material to get rid of water accumulation, and to provide means through which a particle accumulation can be observed to determine cleaning.

3,675,399

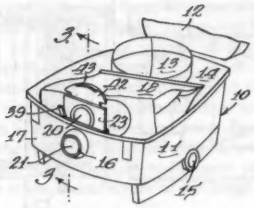
VACUUM CLEANER

George A. Westergren, White Bear Lake, Minn., assignor to Whirlpool Corporation

Filed April 21, 1969, Ser. No. 817,762

Int. Cl. B01d *46/00*

U.S. Cl. 55—357 **3 Claims**



A vacuum cleaner that contains a dirt separating filter member such as a paper bag that is releasably attached to an adapter which itself is releasably supported on a bracket to provide air flow access into the filter member so that the adapter can be removed from the vacuum cleaner when it is desired to attach a filter member thereto or to remove a filter member therefrom.

3,675,400

COLLECTING HOOD FOR COKE-QUENCHING CARS

Wilhelm Kubsch, Dortmund-Derne, Germany, assignor to Hartung, Kuhn & Co., Maschinenfabrik GmbH, Dusseldorf, Germany

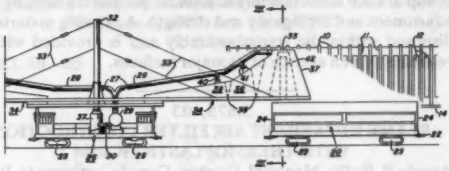
Filed April 14, 1970, Ser. No. 28,380

Claims priority, application Germany, April 21, 1969, P 19 20 130.0

Int. Cl. B01d *50/00*; B05b *3/18*

U.S. Cl. 55—385 **8 Claims**

Anti-pollution apparatus comprising a hood carried on a cantilever arm supported on a hood car mounted on tracks. The hood extends over a coke-quenching car mounted on the same tracks as the hood car and is connected to a suction and dust extraction device such that gases and dust which rise from the coke batch as it is pushed out of a horizontal by-product coke oven and into the quenching car will be conveyed to a gas-stream purifying device rather than being permitted to escape into the air. As the quenching car moves from the coke oven to a quenching station, the hood car and the hood carried thereby follows such that the hood con-



tinually covers the quenching car and prevents the escape of pollutants.

3,675,401

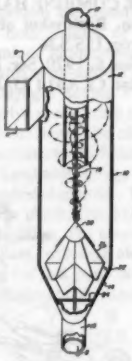
CYCLONES TO LESSEN FOULING

Ronald A. Cordes, Berkeley, Calif., assignor to Esso Research and Engineering Company

Filed April 13, 1970, Ser. No. 27,567

Int. Cl. B01d *45/16*

U.S. Cl. 55—394 **5 Claims**



A cyclone separator especially useful for separating gases from solid materials which tend to cohere and foul conventional cyclones is described. The cyclone is provided with baffle means within the cyclone barrel below the natural vortex to reduce the residual spin of the gas-solid suspension below the natural vortex thereby lessening the tendency toward fouling.

3,675,402

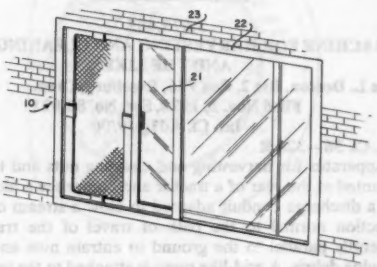
ADJUSTABLE FILTER ASSEMBLY

John Howard Weed, 1600 S. Eads St., Arlington, Va.

Filed Nov. 20, 1970, Ser. No. 91,236

Int. Cl. B01d *39/08*

U.S. Cl. 55—496 **1 Claim**



A frame assembly for a filter or the like which is adapted to be inserted in apertures of buildings such as windows or doors

or the like. The frame assembly is telescopically adjustable in two different directions for being accommodated by different size and shape apertures, and is provided with an elongate clamp at each telescopically adjustable portion for holding the adjustment and for rigidity and strength. A filtering material is disposed within the frame assembly and is provided with a retaining screen at each of its major surfaces.

3,675,403

FLAME RETARDANT AIR FILTER CONSTRUCTION WITH THERMOPLASTIC SCRIM

Angelo P. Ruffo, Montreal, Quebec, Canada, assignor to Johnson & Johnson

Filed March 10, 1970, Ser. No. 18,315
Int. Cl. B01d *23/02*
U.S. Cl. 55—524 **5 Claims**

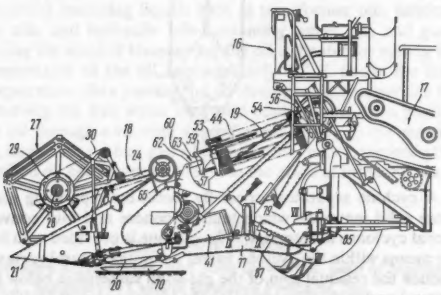
The invention provides a scrim material permitting the use of normally combustible tackifiers in filter devices, wherein the scrim is composed of an open-network structure with air pressure drop characteristics not exceeding 0.10 inch/water measured at 500 cfm per square foot of filter medium area.

3,675,404

HILLSIDE COMBINE HARVESTER

Khanaan Ilich Izakson, Rostovskoi oblasti, ul. III Internatsionala, 92a, Taganrog, U.S.S.R.

Filed Jan. 6, 1970, Ser. No. 933
Int. Cl. A01d *75/28*
U.S. Cl. 56—209 **8 Claims**



A hillside combine harvester comprising a thresher including a header consisting of an inclined body and a platform pivotably connected to the latter; the pivotable connection providing for balancing of the platform on the inclined body and controlling motion thereof so as to enable the combine to operate under a wide range of hillside harvesting conditions.

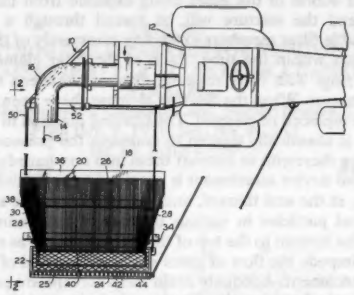
3,675,405

MACHINE FOR HARVESTING AND CLEANING NUTS AND THE LIKE

John L. Denton, Rte 2, Box 776, Roseburg, Oreg.

Filed Nov. 2, 1970, Ser. No. 86,021
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R **9 Claims**

Apparatus for harvesting and cleaning nuts and the like is mounted at the rear of a tractor and comprises a blower having a discharge conduit adapted to blow a stream of air in a direction normal to the path of travel of the tractor and generally parallel to the ground to entrain nuts and accompanying debris. A grid-like ramp is attached to the tractor and disposed in the air stream. A basket is mounted at the high end of the ramp and a backstop grid is positioned at the edge of the basket remote from the ramp. Nuts and debris entrained in the air stream are blown onto the ramp, the debris falling through the spaces in the grid while the nuts ride up the ramp and pass



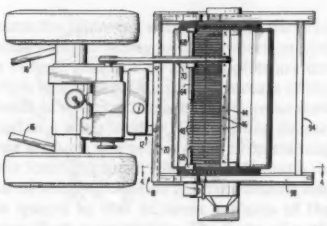
into the basket. The backstop prevents nuts from being blown over the basket.

3,675,406

BERRY PICKING MACHINE

David C. Grant, and Byron A. Lamson, both of Addison, Maine

Filed Sept. 9, 1970, Ser. No. 70,789
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **9 Claims**



A hollow rotating drum in the form of a plurality of circumferentially spaced rows of picking fingers extend tangentially with their free ends in the direction of drum movement at the forward end of the wheeled vehicle. An endless conveyor belt extends through the center of a fixed hollow collecting tube, parallel to the axis of finger rotation with radial guide members extending inwardly from each of the rows of picking fingers adjacent their fixed ends to discharge the picked berries, through an opening in the collecting tube onto the conveyor belt. The conveyor belt discharges the picked berries into a container located at one end of the collecting tube.

3,675,407

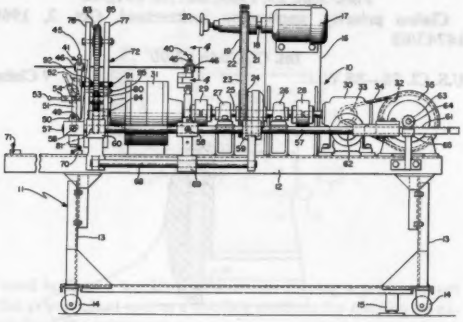
MACHINE FOR SPLICING TIRE CORD

James F. LaRue, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 9, 1970, Ser. No. 79,433
Int. Cl. B65h *69/06*
U.S. Cl. 57—22 **20 Claims**

A machine for splicing adjacent ends of textile cords suitable for reinforcing rubberized material used to build pneumatic tires. The machine has a pair of clamps for holding a couple of cord ends in tensioned, adjacent parallel relation, and a ring with a spool of thread for rotating in thread-wrapping relation around the cord ends, after the free end of the thread is knotted to the cord ends intermediate the clamps. The clamps are movable along an axis normal to the

plane of the ring when the ring rotates, such that the thread wraps in spiraling relation around the cord ends held between



the clamps. The thread extending from the wrapped cord ends is then cut and tied to the cord ends to complete the splice.

3,675,408

POLYAMIDE FILAMENTS

Burno Marcio Pacini; Desmond Alfred Price, and Anil Chandrakant Parikh, all of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 31, 1969, Ser. No. 889,455

Int. Cl. D02g *3/02*

U.S. Cl. 57—140 BX **6 Claims**

A linear terpolyamide derived from 80 percent by weight of hexamethylene diammonium adipate, 10 percent by weight of caprolactam and 10 percent by weight of hexamethylene diammonium isophthalate is especially useful for melt spinning into a side-by-side conjugate filament in which the other component is preferably polyhexamethylene adipamide. In order to obtain a satisfactory crimp permanence and hot water retraction, the filament, after drawing, is heat relaxed at a relax ratio greater than 1.3. A monofilament yarn has particular application in the manufacture of stockings.

3,675,409

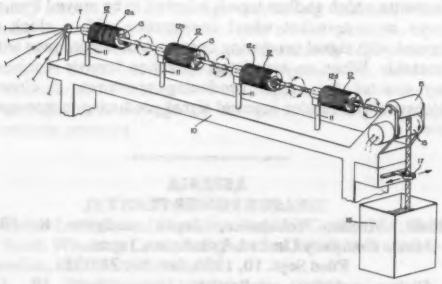
COMPACT MULTI-FILAMENT TEXTILE TOW AND METHOD OF MAKING THE SAME

Nathan Rosenstein, West Hartford, Conn., assignor to Hartford Spinning (Canada) Ltd.

Filed Jan. 27, 1970, Ser. No. 6,080

Int. Cl. D01g *1/00*

U.S. Cl. 57—144 **12 Claims**



Multi-filament textile tow is rendered compact by continuously disposing wrapper yarns in generally helical paths around the tow, one such yarn being disposed in a clockwise manner and the other counter-clockwise.

3,675,410

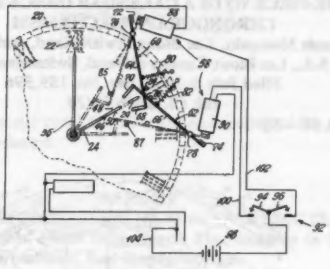
REMOTE CONTROLLED CLOCK RESET DEVICE

Dana J. Blackwell, Naugatuck, Conn., assignor to The Lewis Engineering Company, Naugatuck, Conn.

Filed June 1, 1971, Ser. No. 148,717

Int. Cl. G04c *9/00*

U.S. Cl. 58—35 **12 Claims**



A clock setting mechanism for automatically and instantaneously shifting the hour hands of clocks forward or backward by a predetermined amount such as an hour for the purpose of complying with semi-annual changes between "Standard Time" and "Daylight Saving Time." In addition to the conventional clock drive mechanism including the friction drive which moves the hour hand, the clock is provided with power-operated driver members which normally are out of engagement with the hour hand assemblage. The hour hand normally turns in the conventional manner. When it is desired to advance or to set back the clock, this being done from a two o'clock (usually A.M.) position, the hour hand is engaged by one of the driver members, utilizing electromagnets and a remote switching control for this purpose, to effect a 1-hour, forward or backward adjustment as required by Daylight or Standard Time.

3,675,411

WORLD TIMEPIECE

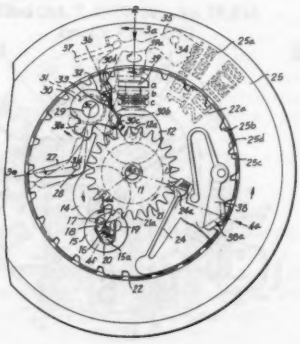
Tadashi Sakuma, Matsudo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Feb. 24, 1971, Ser. No. 118,334

Claims priority, application Japan, Feb. 27, 1970, 45/16452

Int. Cl. G04b *19/22*

U.S. Cl. 58—42.5 **9 Claims**



A timepiece capable of indicating the local time for localities in two to 24 time zones based on the universal time system and having a 24 hours indicating dial to make a single revolu-

tion for each 24 hours and a locative rim indicating the geographical locations of 24 local time zones (cities). The twenty-four hours indicating dial can be independently shifted without affecting the home-base time reading or said locative rim when entering a new time zone and rotates with said locative rim during adjustment thereof.

3,675,412

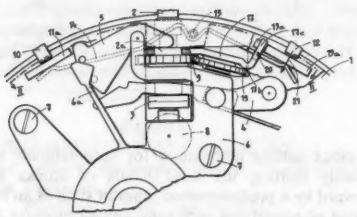
TIME-PIECE WITH A CALENDAR INDICATOR AND CHRONOGRAPH MECHANISM

Paul-Louis Mouquin, Les Bioux, Switzerland, assignor to Valjoux S.A., Les Bioux Canton of Vaud, Switzerland

Filed July 6, 1971, Ser. No. 159,596

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **5 Claims**



A time-piece with a calendar indicator, comprising a rocking bar oscillating in a plane perpendicular to the clockwork, coaxially with the driving shaft, a function of which is to reset time, this rocking bar carrying a pinion constantly in mesh with a pinion born by the shaft and being driven by a push-piece which permits moving it against the action of a return spring, in a position wherein its pinion meshes with a contrate gear of the calendar indicator in such a manner that, when pressure is applied to the push-piece, the working of the driving shaft permits the indicator to rotate in one or the other direction.

3,675,413

WATCH MOVEMENT HAVING TOTALIZERS

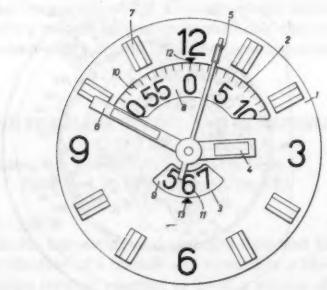
Josef Fluck, Grenchen, Switzerland, assignor to A Schild S.A., Grenchen (Canton of Soleure), Switzerland

Filed June 28, 1971, Ser. No. 157,489

Claims priority, application Switzerland, July 2, 1970, 10046/70

Int. Cl. G04f *7/04*

U.S. Cl. 58—74 **10 Claims**



A watch movement operating regular time indicators and two totalizers mounted coaxially to the center of the watch capable of being returned to a zero position.

3,675,414

WRIST WATCHES

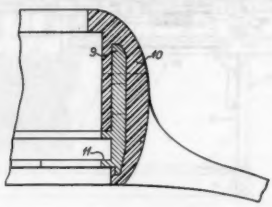
Gerard Cachelin, Le Locle, Switzerland, assignor to Fabrique d'Horlogerie Ch. TISSOT & Fils S.A., LeLocle, Switzerland

Filed Sept. 29, 1969, Ser. No. 861,962

Claims priority, application Switzerland, Oct. 2, 1968, 14743/68

Int. Cl. G04b *37/00*

U.S. Cl. 58—88 W **7 Claims**



A wrist watch comprising a watch case in which the watch movement is lodged, and a bracelet integral with a support for the watch, the bracelet and the support being made in one piece of synthetic material, and the said support surrounding the watch like a case rim.

3,675,415

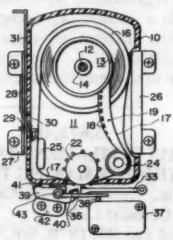
PROGRAM DEVICE FOR PRODUCING TIME SIGNALS AND THE LIKE

Reiji Sato, Kanagawa, Japan, assignor to Amano Corporation, Yokohama, Japan

Filed March 29, 1971, Ser. No. 128,965

Int. Cl. G04b *21/08*

U.S. Cl. 58—150 **7 Claims**



A program device for producing time signals and the like according to a program wherein an endless tape is mounted in a cassette which endless tape is adapted to be moved frame by frame by a sprocket wheel cooperating with a clock and formed with signal producing apertures in accordance with a timetable. When an associated operation lever is received in any one of the signal producing apertures, it closes a micoswitch to render external signal producing means operative.

3,675,416

VAPOR POWER PLANT

Riichi Maeda, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Sept. 10, 1970, Ser. No. 71,033

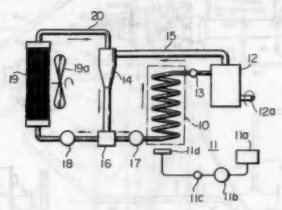
Claims priority, application Japan, Sept. 18, 1969, 44/73575

Int. Cl. F01k *25/08, 19/10*

U.S. Cl. 60—36 **2 Claims**

A vapor power plant driven with a working fluid vaporized from a liquid having a relatively freezing point such as

trichloromonofluoromethane, comprising a working fluid circuit and a cooling fluid circuit both of which share limited common a passage with each other so that the same liquid can



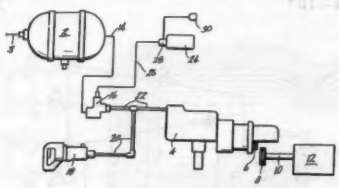
be used both as a working medium for driving a prime mover of the power plant and as a cooling medium for cooling an exhaust from the prime mover.

3,675,417

ENGINE STARTING SYSTEM WITH COMBINATION AIR RELAY AND CHECK VALVE

John Shum, Jr., Valley Station, Ky., assignor to Olin Corporation

Filed April 15, 1971, Ser. No. 134,286
Int. Cl. F02c 7/26
U.S. Cl. 60—39.14 **4 Claims**



A valve assembly for use preferably with an engine starting system, the valve assembly including a housing providing a fluid flow path therethrough. A valve seat astride the flow path is disposed in the housing, and a valve head is mounted on a piston reciprocally mounted in the housing. The piston defines, with the housing, a control chamber and a reaction chamber, the latter of which communicates with the flow path downstream of the valve seat. Spring means biases the piston and valve head toward the valve seat so that the flow path is normally closed to fluid flowage therealong. Increased fluid pressure in the control chamber acts on the piston to open valve and thus the flow path, and comparatively high pressure downstream of the valve seat raises the pressure in the reaction chamber to force the valve head against the valve seat to prevent upstream flowage of the gases creating the high downstream pressure.

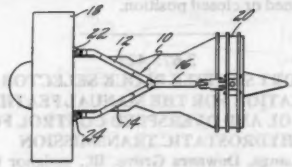
3,675,418

JET ENGINE FORCE FRAME

Carl Heinz Lenkeit, and Cornelius Stephen Conklin, Jr., both of South Windsor, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 19, 1970, Ser. No. 90,971
Int. Cl. F02c 7/20; B64d 27/10
U.S. Cl. 60—39.31 **3 Claims**

Apparatus for transferring the axial forces present in the skin of a thin walled, hollow cylinder with little distortion of the skin is disclosed. The invention permits elimination of substantially all ovalization of a gas turbine jet engine case which results from transferring axial forces in the engine to a second body; under some conditions backbone bending of the engine case is also reduced.

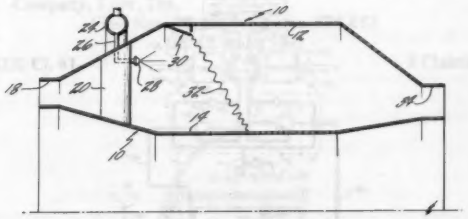


3,675,419

COMBUSTION CHAMBER HAVING SWIRLING FLOW

George D. Lewis, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 26, 1970, Ser. No. 84,088
Int. Cl. F02c 3/24
U.S. Cl. 60—39.36 **9 Claims**



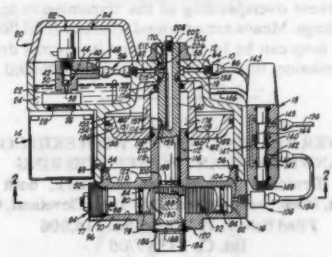
A combustion chamber is arranged so that swirling flow is formed therein to improve the manner and rate of burning above that which is normally obtainable. Swirl inducing means are provided at the entrance to the burner and flameholding means are provided around the outer circumference of the burner. Fuel is injected rearwardly of the swirl inducing means.

3,675,420

VALVE ACTUATOR

Ladd M. Adams, Norman, Okla., assignor to Balon Corporation, Okla. City, Okla.

Filed Oct. 7, 1970, Ser. No. 78,816
Int. Cl. F15b 1/02
U.S. Cl. 60—51 **20 Claims**



A valve actuator utilizing a power fluid and a biasing fluid for the opening and closing of a valve member of a valve assembly, wherein a portion of the power fluid is retained in an

accumulator assembly which is adapted to utilize the biasing fluid to move the power fluid to a valve member actuator to either open or close the valve member upon actuation of the valve actuator in such a manner that the valve assembly fail-safe in an opened or closed position.

3,675,421

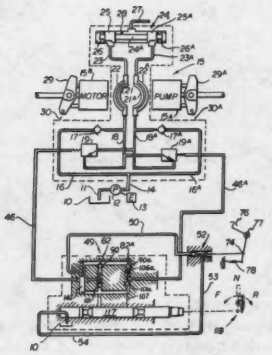
LOW EFFORT SHUTTLE BLOCK SELECTOR SPOOL MODIFICATION FOR THE MANUAL FEATHERING CONTROL AND OVERSPEED CONTROL FOR A HYDROSTATIC TRANSMISSION

Rodger W. Asmus, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 14,725, Feb. 24, 1970, abandoned, which is a continuation of Ser. No. 731,472, May 23, 1968, abandoned. This application Nov. 5, 1970, Ser. No. 87,317

Int. Cl. F16d *31/02*

U.S. Cl. 60—53 R **24 Claims**



A hydraulic control system for a hydrostatic transmission in which are provided valving means which can be selectively positioned corresponding to forward, neutral or reverse drive of the transmission and including means for dumping excess fluid pressure from the fluid pressure circuit in order to prevent damage to the transmission and under certain conditions to prevent overspeeding of the transmission to further prevent damage. Means are provided whereby fluid flow in the hydrostatic loop can be by-passed from its normal drive path in the transmission, through the valve means provided.

3,675,422

FULL POWER BRAKING SYSTEM WITH SKID CONTROL AND REDUNDANT POWER STEERING

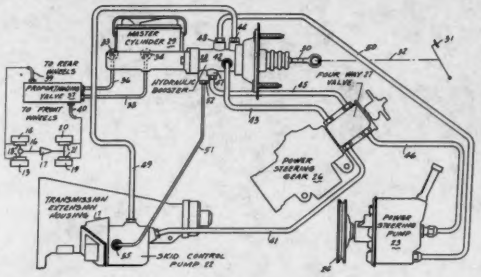
Gilbert H. Drutchas, and Hubert M. Clark, both of Birmingham, Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Feb. 9, 1971, Ser. No. 114,006

Int. Cl. F15b *7/00*

U.S. Cl. 60—54.5 P **12 Claims**

Skid control and conventional braking functions are integrated in a single assembly while providing power means through the use of an auxiliary power source, the power steering pump, for braking modes where the main source of power braking, the skid control pump, is unable to provide the required power. In the event of failure, the power steering



pump is available for braking and, vice versa, the skid control pump is available for power steering.

3,675,423

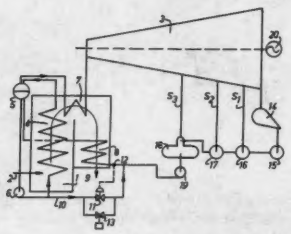
METHOD AND MEANS CUTTING OUT LOW TEMPERATURE CORROSION BY SULPHUR CONTAINING FUEL IN THE TERMINAL PARTS OF A STEAM GENERATOR IN THE ABSENCE OF AIR-HEATING MEANS

Jean Vidal, Ville D'Avray, and Jacques Lemoine, Paris, both of France, assignors to Stein Industrie, Paris, France

Filed May 13, 1970, Ser. No. 36,817

Int. Cl. F22d *5/00*

U.S. Cl. 60—107 **3 Claims**



To prevent corrosion in the economizers and the like structures at the output end of a steam generator burning sulphur-containing fuel and feeding a steam turbine, there is provided a channel connecting the input of the steam generator boiler with the input of the economizer so as to raise the temperature in the latter above corrosion temperature. A gate in said channel allows an adjustment of the flow of water through the latter and a by-pass for said gate allows a low basic permanent flow of water to pass through said channel, which flow can be stopped by a further gate.

3,675,424

NOZZLE FOR SHIP'S PROPELLER WITH WATER EJECTION ALONG THE TRAILING EDGE OF THE NOZZLE

Marinus Willem Cornelis Oosterveld, Bennekom, Netherlands, assignor to LIPS N.V.

Filed May 18, 1970, Ser. No. 38,077

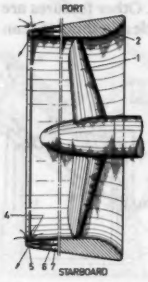
Claims priority, application Great Britain, May 19, 1969, 25,503/69

Int. Cl. B63h *11/02, 25/46*

U.S. Cl. 60—221 **4 Claims**

A Kort nozzle surrounding a ship's propeller has slots along the inner and outer sides of its trailing edge. Water can be

selectively drawn into the inner slots and ejected from the outer slots, or vice versa, to augment the action of the nozzle



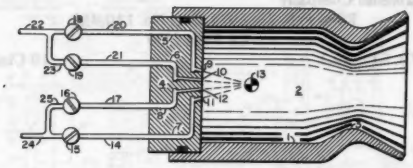
as an accelerating nozzle or as a decelerating nozzle. Alternatively, water can be drawn in and ejected selectively about the periphery of the nozzle to augment steering.

3,675,425

VARIABLE THRUST REACTION MOTOR WITH MULTIPLE SETS INJECTOR ORIFICES

Paul R. Scannell, Saratoga; Phil D. La Force, San Jose, and Wayne T. O'Connell, Oakland, all of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 11, 1966, Ser. No. 564,144
Int. Cl. F02k *9/02*
U.S. Cl. 60—258 **2 Claims**



A variable thrust fluid propellant rocket motor is provided with an injector supplied with first and second fuel and oxidizer feed lines, each line being equipped with variable flow valves. The injector is adapted to cause impingements of the first fuel and oxidizer streams on the second fuel and oxidizer streams. At low thrust levels, only the first streams are used. When higher thrust levels are required, flow of the second streams is initiated and impingement of the first streams on the second streams provides for mixing of the propellants.

3,675,426

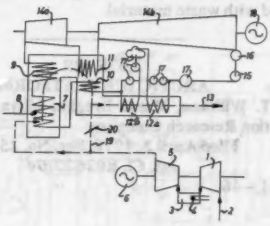
METHOD AND MEANS FOR OPERATING A STEAM GAS PLANT INCLUDING A GAS TURBINE, A STEAM TURBINE WITH ITS STEAM GENERATOR AT THE DOWNSTREAM END

Jean Vidal, Ville D'Avray; Jean Parisot, and Jacques Lemoine, both of Paris, all of France, assignors to Stein Industrie, Paris, France

Filed May 13, 1970, Ser. No. 36,762
Int. Cl. F02c *7/02*; **F02g** *5/02*
U.S. Cl. 60—39.18 B **5 Claims**

Method and means for operating a steam gas plant including a gas turbine, and a steam turbine with its steam generator at the downstream end.

The method and means for improving the operation of a steam gas plant comprising a gas turbine the exhaust gases of which sustain the combustion of the burners of a steam generator, which latter feeds steam into a steam turbine. A fraction of the exhaust gases is diverted through an adjusting damper into the steam generator at a point where the tem-



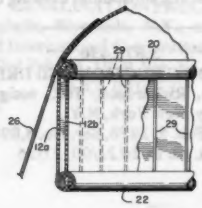
perature of the flue gases approximates that of said exhaust gases. Said point may lie beyond a reheater inserted for instance between two stages of the steam turbine and ahead of a heat exchanger.

3,675,427

UNDERWATER STORAGE DEVICE

Charles M. Hix, Jr., Bryan, Tex., assignor to Arcadia Refining Company, Tyler, Tex.

Filed Nov. 25, 1969, Ser. No. 879,653
Int. Cl. B65g *5/00*
U.S. Cl. 61—.5 **8 Claims**



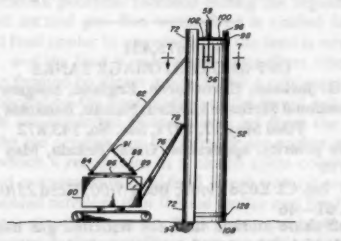
An underwater storage device for storing fluids lighter than water wherein a tank is formed of a cylindrical wall having a top closure and an open bottom so that the fluids will enter into the tank and pass upwards toward the top closure. The tank is adapted to be positioned in the water without any rigid restraints.

3,675,428

METHOD AND APPARATUS FOR WASTE DISPOSAL

James P. Watts, 6930 East Pinchot, Scottsdale, Ariz.

Filed Sept. 23, 1970, Ser. No. 74,601
Int. Cl. E02d *15/00*
U.S. Cl. 61—35 **10 Claims**



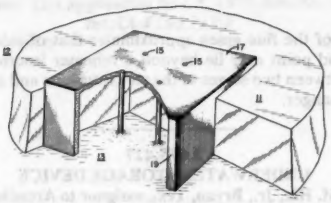
A method and apparatus for waste disposal whereby an encased helical auger may be used sequentially for creating voids

in the soil and for compacting waste material in said voids; dump bin and conveyor means for feeding waste material to said encased auger and means for scattering earthen material over a considerable area of the ground after it has been removed from the earth by said auger for covering voids previously filled with waste material.

3,675,429
ARCTIC ICE PLATFORM

Bertram T. Willman, Marsa Bregha, Libya, assignor to Esso Production Research Company

Filed April 3, 1970, Ser. No. 25,464
Int. Cl. E02d *27/04*
U.S. Cl. 61—46 **6 Claims**

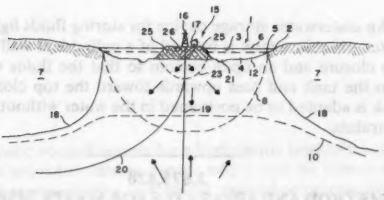


A method of forming a permanent offshore platform in areas where a mass of ice rests on the earth's surface in winter but thaws during more moderate weather. The platform is formed by insulating the surface of the ice proximate the drilling site to prevent any substantial thawing of the ice.

3,675,430
ARCTIC CONSTRUCTION AND DRILLING

Norman E. Haimila, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Feb. 5, 1970, Ser. No. 8,898
Int. Cl. E02d *21/00, 27/36*
U.S. Cl. 61—46 **23 Claims**



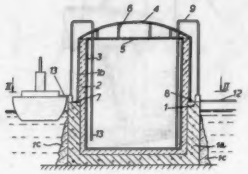
A method for constructing a working base in a permafrost area wherein the working base is located in bodies of water meeting certain requirements. A method for constructing a working base in a body of water and the working base itself.

3,675,431
OFF-SHORE STORAGE TANKS

Robert G. Jackson, Hornchurch, England, assignor to Conch International Methane Limited, Nassau, Bahamas

Filed May 17, 1971, Ser. No. 143,872
Claims priority, application Great Britain, May 26, 1970, 26,035/70
Int. Cl. E02d *29/06;* **B65g** *5/00;* **F25d** *23/00*
U.S. Cl. 61—46 **4 Claims**

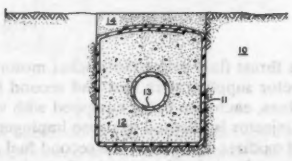
An off-shore storage tank for liquefied gas has an outer shell, of which at least the lower part, which is immersed in the water, is made of solid concrete, sufficiently thick and heavy when in place to sink in the water even when empty, and is lined with thermal insulation such that in operation, when storing liquefied gas at cryogenic temperatures, the said lower part is maintained at a surface temperature below the freezing point of the water in which it is immersed so that a coating of frozen water is formed on the tank which acts as an additional seal for the concrete. Other features are that the upper part of the tank wall is sufficiently thinner than the lower part to provide an external annular step constituting a walkway around the tank, and the provision of tangential piers as part of the tank structure at points opposite to and adjacent the shore line. The tank is preferably made initially light enough in weight so that it can be floated to its location of use, then further concrete or other loading is added to sink the tank to the sea bed.



3,675,432
PIPELINE CONSTRUCTION

William A. Keene, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 28, 1971, Ser. No. 110,451
Int. Cl. F16l *1/00*
U.S. Cl. 61—72.1 **10 Claims**



In order to insulate a pipeline from the earth in which it is buried, the pipe is surrounded by a mass of dry earth, sand and/or gravel and a water-impermeable membrane.

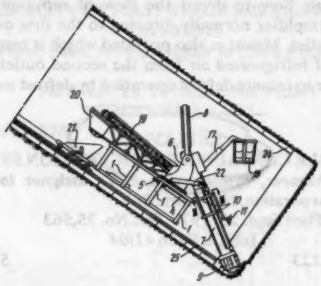
3,675,433
DEVICE FOR CONSTRUCTING MINES

Sergei Nikolaevich Silvestrov, ulitsa Basseinaya, 55, kv. 66; Moisei Mikhailovich Sinichkin, ulitsa Marata, 75, kv. 25; Grigory Ivanovich Shirokov, ulitsa Basseinaya, 55, kv. 51; Jury Filippovich Soloviev, Moskovsky prospekt, 186, kv. 127; Nikolai Demyanovich Silvestrov, ulitsa Basseinaya, 55, kv. 66, and Boris Zinovievich Amusin, ulitsa Dzerzhinskogo, 32, kv. 54, all of Leningrad, U.S.S.R.

Filed July 14, 1970, Ser. No. 54,736
Int. Cl. E01g *3/04*
U.S. Cl. 61—84 **2 Claims**

The present invention relates to device for constructing mines, in which the mining member is mounted on a jib. This

device is provided with a means which is also mounted on the



jib and makes it possible to supply the facing elements to a required place of the face and to mount them thereat.

3,675,434

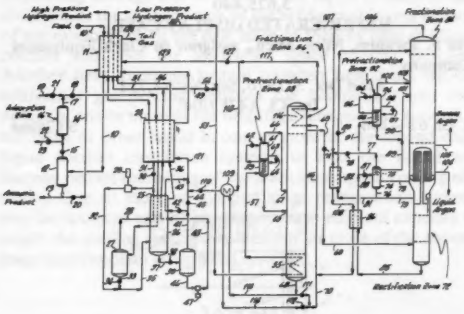
SEPARATION OF LOW-BOILING GAS MIXTURES

Duffer B. Crawford, Westfield, N.J., and Johannes C. Norenburg, New York, N.Y., assignors to Pullman Incorporated, Chicago, Ill.

Division of Ser. No. 657,662, Aug. 1, 1967, which is a continuation-in-part of Ser. No. 438,900, March 11, 1965, abandoned. This application Feb. 27, 1970, Ser. No. 15,012

Int. Cl. F25j *1/00, 3/08, 3/06*

U.S. Cl. 62—23 5 Claims



A process for the recovery of hydrogen from an ammonia synthesis purge gas comprising ammonia, hydrogen, nitrogen and methane wherein ammonia is first separated from the purge gas and the gas substantially free of ammonia is subsequently cooled to very low temperatures, e.g., −300°F., thereby obtaining a liquid phase and a hydrogen-rich gaseous phase.

3,675,435

LOW PRESSURE ETHYLENE RECOVERY PROCESS

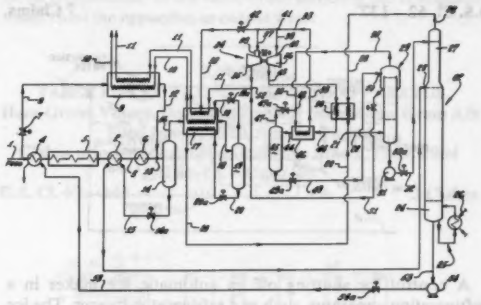
Steven B. Jackson, Fullerton; Ernest Freireich, Los Angeles, and James D. Hammond, Alhambra, all of Calif., assignors to Fluor Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 800,875, Feb. 20, 1969. This application Nov. 7, 1969, Ser. No. 874,842

Int. Cl. F25j *3/02*

U.S. Cl. 62—26 16 Claims

Process for the removal of methane from a hydrocarbon feed containing ethylene, methane and higher boiling hydrocarbons with minimum loss of ethylene. Methane is separated overhead from the feed in a separation zone at a first lower pressure; a first portion of this overhead vapor is expanded through an expansion motor producing an energy output, a second portion of the overhead vapor is compressed to a second pressure greater than the first pressure in a compressor



driven by the motor output. The compressed vapor portion is then cooled to condense the major portion of the methane and the condensed methane is returned to the separation zone as reflux and recovering ethylene as bottoms from the separation zone. The methane vapor is recovered as fuel gas.

3,675,436

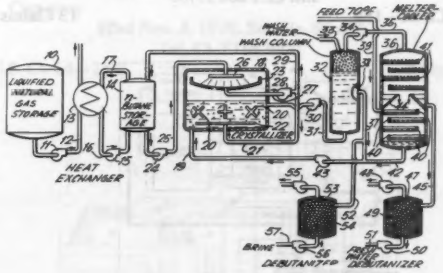
DESALINATION PROCESS

Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Scientific and International Corporation

Filed Feb. 25, 1970, Ser. No. 14,047

Int. Cl. B01d *9/04*

U.S. Cl. 62—58 9 Claims

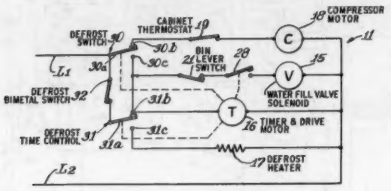


The freeze desalination of sea water is accomplished using the refrigeration potential released during the regassification of liquified natural gas. Sea water feed is cooled in an ice melter and feed cooler to near freezing, the feed is mixed with cold brine, and the feed is passed to a crystallizer wherein ice crystals are formed by direct contact with a refrigerant which has been cooled by the evaporation of the liquid natural gas. Ice crystals are separated from a slurry led from the crystallizer and the ice crystals are fed into the ice melter and feed cooler in which a refrigerant in a closed cycle condenses to melt ice and evaporates to cool feed. Fresh water is separated from condensed refrigerant in the ice melter and feed cooler. Refrigerant is stripped from the fresh water and brine passing from the system. In the crystallizer, gaseous refrigerant emerging from the feed is condensed by liquid refrigerant spraying into a tray suspended above the feed.

3,675,437
WATER FILL SHUT-OFF CONTROL FOR A DOMESTIC ICEMAKER

William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation

Filed June 18, 1970, Ser. No. 47,519
Int. Cl. F25d 21/00; F25c 1/10
U.S. Cl. 62—137 7 Claims

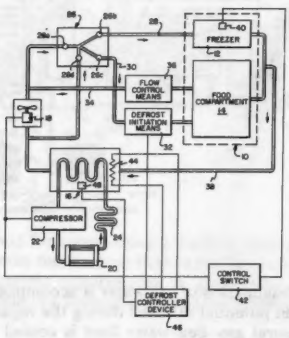


A control for shutting off an automatic ice maker in a refrigeration apparatus, such as a refrigerator-freezer. The ice maker apparatus is driven by an electric motor which is permitted to run continuously and thereby provide additional timing functions for other controls in the refrigeration apparatus. The ice maker mechanism is caused to be inoperative for purposes of providing ice bodies such as when the level of collected ice bodies in a storage bin reaches a preselected full level. The ice maker mechanism is made inoperative for providing ice by preventing delivery of water to the ice maker freezing mold under such conditions.

3,675,438
REFRIGERATOR WITH FLUID AMPLIFIER MEANS

Kazuo Takemasa, and Hitoshi Komada, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tokyo Sanyo Electric Co., Ltd., Gunma, Japan

Filed Aug. 7, 1970, Ser. No. 62,106
Claims priority, application Japan, Aug. 11, 1969, 44/63426; April 13, 1970, 45/31394
Int. Cl. F25d 21/06
U.S. Cl. 62—156 13 Claims

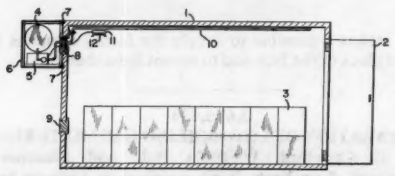


A refrigerator includes a first and second storage compartments evaporator means for refrigerating air, means for circulating the refrigerated air to both of the compartments and means for defrosting the evaporator. A fluid amplifier is provided in the refrigerated air circulating passage between air circulating means and the first compartment. The fluid amplifier includes a single inlet for receiving the refrigerated air from the outlet of air circulating means, a first outlet communicated with the first compartment and a second outlet communicated with the second compartment, and a control port communicated with the refrigerated air circulating passage downstream of evaporator means. The control port operates in response to a predetermined pressure drop in the refrigerated air flow to divert the flow of refrigerated air through the amplifier normally directed to the first outlet to the second outlet. Means is also provided which is responsive to the flow of refrigerated air from the second outlet of the fluid amplifier to initiate defrost operation by defrost means.

3,675,439
DETACHABLE CONTAINER REFRIGERATION SYSTEM

David Paul Maurer, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,563
Int. Cl. F25b 41/04
U.S. Cl. 62—223 5 Claims

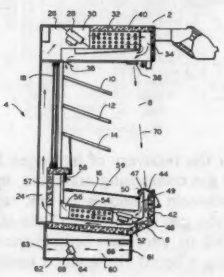


A cryogenic liquid spray refrigeration system detachably mounted on a portable product shipping container for in-transit refrigeration of said container in which refrigeration system requires minimal alteration of said shipping container.

3,675,440
REFRIGERATED DISPLAY CASE

Fayez F. Ibrahim, Niles, Mich., assignor to Clark Equipment Company

Filed Dec. 3, 1970, Ser. No. 94,711
Int. Cl. A47f 3/04
U.S. Cl. 62—256 5 Claims



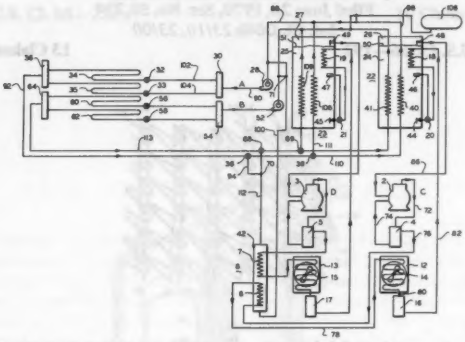
This is a refrigerated display case with a front opening for unimpeded access to the refrigerated area and a movable closure section rear opening to provide intermittent access to the refrigerated area. The case has a curtain of refrigerated air across the front access opening and air conduits along the side of he rear opening to provide recirculation of the refrigerated air. The case has a separate horizontal curtain of refrigerated air across the lower portion of the refrigerated space to provide two vertically adjacent zones of refrigeration within the refrigerated space. The case also has a curtain of non-refrigerated air under the bottom of the refrigerated space to remove spillover cold air from the floor in front of the case.

3,675,441

TWO STAGE REFRIGERATION PLANT HAVING A PLURALITY OF FIRST STAGE REFRIGERATION SYSTEMS

Arthur Perez, Niles, Mich., assignor to Clark Equipment Company

Filed Nov. 19, 1970, Ser. No. 91,041
Int. Cl. F25b 47/00
U.S. Cl. 62—278 3 Claims



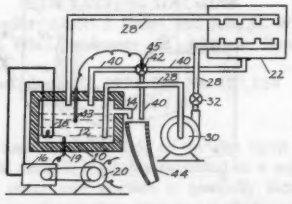
This is a two stage refrigeration plant consisting of a plurality of first stage change of phase refrigeration systems and one or more second stage liquid coolant circulation systems interconnected by heat exchange systems. One heat exchange system transfers heat from the brine or other liquid coolant circulating through one or more of the liquid coolant chilling elements in the second stage to the refrigerant in one or more of the evaporators of the first stage to thereby chill the liquid coolant and cool the associated space cooling elements. Another heat exchange system transfers heat from the hot refrigerant gas flowing between the compressor and condenser in one or more of the first stage refrigeration systems to the brine or other liquid in one or more of the second stage liquid coolant circulation systems to heat the liquid and thereby permit defrosting of the associated space cooling elements. One or more of the first stage refrigeration systems may be operated selectively at their most efficient capacity to satisfy the cooling requirements of one or more of the second stage liquid coolant circulation systems.

3,675,442

ATMOSPHERIC WATER COLLECTOR

Rollin J. Swanson, 6337 N. 22nd Street, Arlington, Va.

Filed Feb. 12, 1971, Ser. No. 114,763
Int. Cl. F25d 21/14
U.S. Cl. 62—285 6 Claims



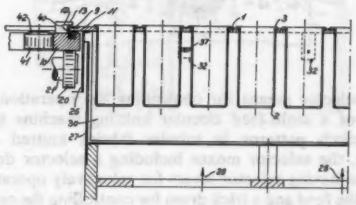
Apparatus including a fresh water cooling bath is provided for obtaining potable water from moisture-laden air. Mechanical refrigeration means intermittently cool the fresh water bath. Conduit means permit the fresh water in the bath to flow to and from a specially designed housing that chanels a flow of moisture-laden air. Vertically aligned condenser filaments are positioned within the housing and connected to the conduit means to provide condensing surfaces at a temperature below the dew point of the air in the housing. Distributing means are provided for either directing the condensed water, depending on its temperature, to the bath, or for directing the condensed water from the apparatus as output water.

3,675,443

TABLE FOR ROTATING FREEZING APPARATUS

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S

Filed June 1, 1970, Ser. No. 42,065
Claims priority, application Denmark, June 2, 1969, 2964
Int. Cl. F25c 1/10
U.S. Cl. 62—345 3 Claims



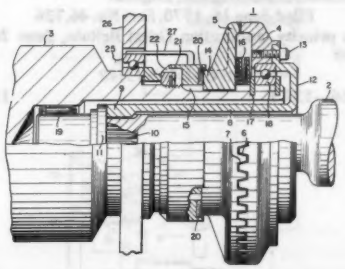
In a freezing apparatus comprising a rotatable horizontal annular plate supporting freezing pockets the inner and outer marginal portions of the plate are movable in the radial directions with respect to an inner and outer supporting ring respectively.

3,675,444

HIGH SPEED SHAFT DISCONNECT UTILIZING A FUSIBLE ELEMENT

Edward R. Whipple, Erie, Pa., assignor to General Electric Company

Filed Nov. 3, 1970, Ser. No. 86,430
Int. Cl. F16d 9/00
U.S. Cl. 64—28 R 8 Claims

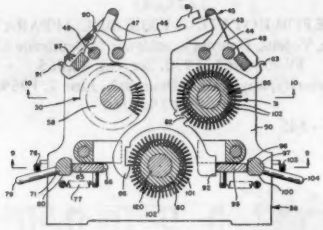


A disconnect arrangement for high speed generators such as those utilized in aircraft electrical systems includes a spring loaded face clutch which has the individual clutch members coupled to the driving and driven shafts. A fusible, low temperature element is positioned between one of the shafts and one of the clutch members to force the clutch members into engagement against the spring force. A friction arm is actuated in response to any one of a number of malfunctions to bring it into contact with a heat conducting member which bears against the fusible element. The heat generated by the friction between the arm and the member melts the disc allowing the spring to separate the clutch members and thereby disconnecting the generator shaft from the driving source.

3,675,445
PATTERN MECHANISM FOR CIRCULAR KNITTING MACHINES

James D. Moyer, Wyomissing, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1970, Ser. No. 75,424
Int. Cl. D04b 15/74
U.S. Cl. 66—50 B 5 Claims

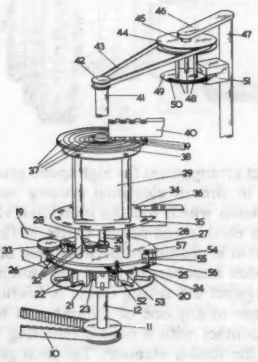


Jack selector means for controlling the operation of the needles of a multi-feed circular knitting machine to form design stitch patterns in tubular fabrics knitted on the machine, the selector means including a selector device at each feed having selector levers for selectively operating the jacks at the feed and a trick drum for controlling the operation of the selector levers, common means for operating the selector devices at a pair of the feeds, means for controlling the operation of the common means, a single control drum for controlling the active positions of the selector levers of the selector devices at the pair of feeds and means for controlling the operation of the single control drum. The selector devices and associated operating means for the pair of feeds are assembled into a common unit for ready attachment to and removal from the machine and means associated with the trick and control drums permit disengagement from and engagement of the drums with their operating means.

3,675,446
POSITIVE FEED SYSTEM FOR CIRCULAR KNITTING MACHINES

Albert Edward Cooke, Leicester, England, assignor to Trip-Lite Limited, South Wigston, England

Filed June 16, 1970, Ser. No. 46,736
Claims priority, application Great Britain, June 20, 1969, 31,214/69
Int. Cl. D04b 15/48
U.S. Cl. 66—132 T 11 Claims

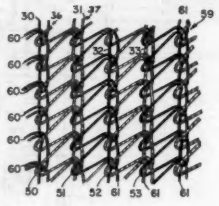


An adjustable positive yarn feed system comprises a variable diameter wheel used to drive a band, tape or the like by which positive feed is applied to a yarn or yarns, adjusting means for varying the wheel diameter a stepping motor for effecting incremental variation of the setting of the adjusting means, and a control device for actuating the stepping motor as and when required.

3,675,447
SIMULATED-WEAVE, WARP-KNIT FABRIC, AND METHOD FOR MAKING THE SAME

George E. Jackson, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 26, 1970, Ser. No. 50,234
Int. Cl. D04b 23/10, 23/00
U.S. Cl. 66—192 13 Claims

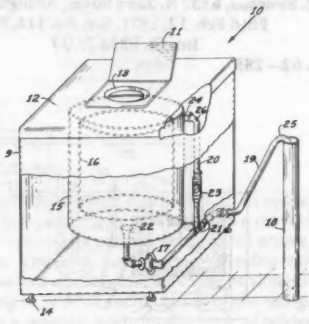


A warp-knit fabric is given a simulated weave appearance by chain stitching one set of warp yarns into wale-wise pillars and looping a portion of each chain stitch in a course wise direction from its pillar, over and around a chain stitch of another pillar in the same course, and back again to its pillar, thus producing "weft" portions in the chain stitch warp yarns. A second set of warp yarns are alternately overlaid and underlaid walewise of the weft portions to produce the simulated weave. The "weft" yarns and chain stitch yarns are one and the same and carried on a single guide bar. The chain stitch yarn forms chain stitches only on one pillar, or wale, and is carried course-wise to wrap around another chain stitch in another pillar, rather than forming a conventional chain stitch therein.

3,675,448
GRAVITY OVERFLOW TUBE FOR AUTOMATIC CLOTHES WASHER

John H. Smith, Rural Route 2, Washington, Ind.

Filed Oct. 26, 1970, Ser. No. 83,864
Int. Cl. D06f 39/08
U.S. Cl. 68—208 3 Claims



A tube for routing excess liquid in an automatic clothes washer to a suitable drain. A clothes washer having an outer tub positioned around an inner tub has a drain connected to an electric pump. A hose is connected to the outlet end of the

pump providing for liquid drainage. A gravity overflow tube has a top end mounted to the top portion of the outer tub at a level above the hose. Excess water in the outer tub flows through the overflow tube by the force of gravity.

3,675,449

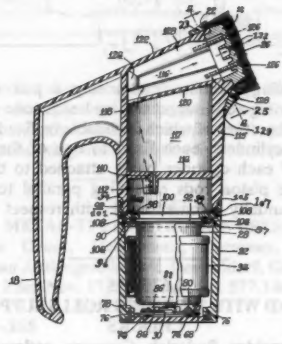
STEAMING APPARATUS WITH REMOVABLE BRUSH

Bernard B. Bluestein, Des Plaines, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed July 12, 1971, Ser. No. 161,741

Int. Cl. D06c *1/00*; D06f *75/00*

U.S. Cl. 68—222 **10 Claims**



A portable steamer for removing wrinkles from fabrics having a cylindrical tank for holding the water used in steaming is disclosed. A steam head is inserted in a steam outlet channel which is located above the cylindrical tank. A removable ring having a material-treating member, such as a brush, surrounds the periphery of the housing which encloses the steam head. The brush is held in place upon the housing of the steamer by two slightly resilient tabs which are integrally formed with the sides of the removable ring. Each of the tabs have an inwardly projecting locking block which is received in a corresponding locking recess in the exterior housing surface of the steam outlet channel portion of the housing.

3,675,450

HIDE PASTING MACHINE

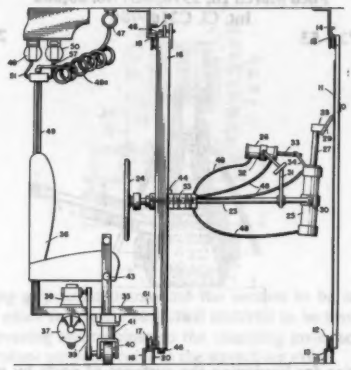
Lando J. Schwaller; Albert J. Razal, and John G. White, all of Sheboygan, Wis., assignors to Akzona Incorporated, Asheville, N.C.

Filed March 23, 1971, Ser. No. 127,154

Int. Cl. C14b *1/00*

U.S. Cl. 69—1 **12 Claims**

For pasting and slicking a hide or the like upon a plate, a wheel-equipped shaft is rotatably mounted in a support and carries at its outer end portion a pivotally mounted air cylinder having a piston stem carrying a slicking blade for stroking the hide, while a second air cylinder on the shaft has a piston stem connected to the first cylinder for moving it toward and away from the plate. The control mechanism operates valves for directing air to opposite ends of the cylinders in sequence for stroking and return movements and for locking the mechanism during the slicking stroke. The support may be slidably mounted in a mobile frame and may carry an operator's seat and power means for moving the frame independently of travel by the hide-carrying plate.



3,675,451

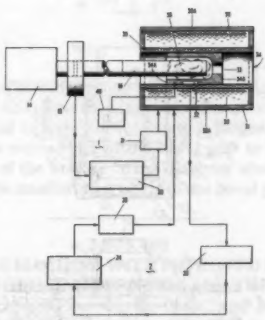
EXTRUSION SYSTEM

Sol Aisenberg, Natick, and James B. Dodge, Pepperell, both of Mass., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed March 23, 1970, Ser. No. 21,702

Int. Cl. B21b *37/08*; B21c *31/00*

U.S. Cl. 72—20 **9 Claims**



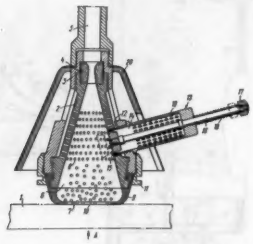
A high pressure, high temperature extrusion apparatus generally includes a pressure means, such as a piston arrangement, for forcing an extrusion material such as a mixed metal powder, through a die which is maintained at a high temperature. A jacket surrounds and supports the die. A pressure responsive, feedback mechanism, control means surrounding the jacket which means are adapted to apply external force to the outer portions of the die, of a sufficient magnitude to counter-balance the inner extrusion forces.

3,675,452

DEVICE FOR SURFACE HARDENING OF PARTS

Jury Anatolievich Osmolovsky, Pisarevsky proezd, 3, kv. 47, Pushkino Moskovskoi Oblasti, and Anatoly Serafimovich Kizilyaev, ulitsa 8 Marta, 7, kv. 118, Ljubertsy Moskovskoi Oblasti, both of U.S.S.R.

Filed March 18, 1970, Ser. No. 20,662
Int. Cl. C21d 7/06
U.S. Cl. 72—53 2 Claims



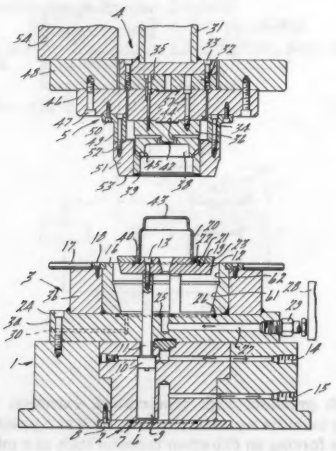
A device for hardening the surfaces of parts by means of plastic deformation. The device permits hardening bodies to be admitted by gravity into a chamber from an additional chamber by opening a valve which normally closes a hole between the two chambers. The valve is then closed and a stream of compressed air is admitted to propell the hardening bodies to harden the surface of parts. The hardening bodies can be caused to reenter the additional chamber upon completion of a hardening operation by opening the valve while the stream of compressed air is being applied.

3,675,453

MACHINE AND METHOD FOR MAKING PULLEY GROOVES OR THE LIKE

Karl Marsch, Burgermeister, Siegler, Strasse 9, 6842 Burstadt, Germany

Filed May 18, 1970, Ser. No. 38,023
Int. Cl. B21d 26/04
U.S. Cl. 72—58 7 Claims



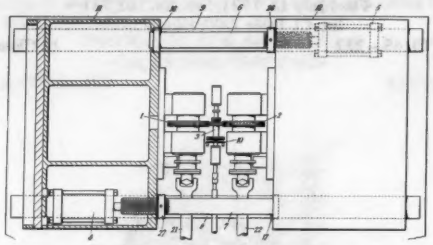
Pulley grooves are formed in a cylindrical wall by a machine and method wherein mechanical force in an axial direction along with outwardly directed hydraulic pressure are applied to the wall to deform it into the desired radial groove shape.

3,675,454

GEAR AND PROFILE ROLLING MACHINES

Leslie Raymond Pratt, West Haddon, near Rugby, England, assignor to Charles Churchill Limited, Birmingham, England

Filed May 26, 1970, Ser. No. 40,557
Claims priority, application Great Britain, June 2, 1969, 27,846/69
Int. Cl. B21h 9/00
U.S. Cl. 72—108 2 Claims



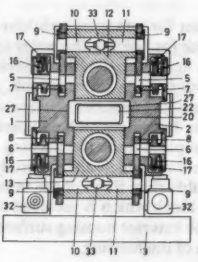
A gear rolling machine, comprising a pair of opposed rotatable forming rolls supported by heads, one of which is slidable and the other of which is slidable or fixed, and a pair of hydraulic cylinders, each fixed to one of the heads, the piston rod of each cylinder being attached to the opposite head and the piston rods extending parallel to and being spaced substantially symmetrically with respect to the load axis.

3,675,455

ROLL STAND WITH WORKING ROLLS SUPPORTED IN CHOCKS

Erich Bretschneider, Buderich, Germany, assignor to Siemag Siegener Maschinenbau G.m.b.H.

Filed Jan. 20, 1971, Ser. No. 107,921
Claims priority, application Germany, Jan. 22, 1970, P 20 02 745.6
Int. Cl. B21b 31/08, 31/16
U.S. Cl. 72—238 8 Claims



The invention relates to a roll stand, with working rolls supported in chocks, the rolling forces of which are absorbed by tension strap members adapted to act on said chocks and which are adjustable relative to each other for the purpose of adjusting the roll gap by means of eccentrics engaged in the tension strap members.

3,675,456

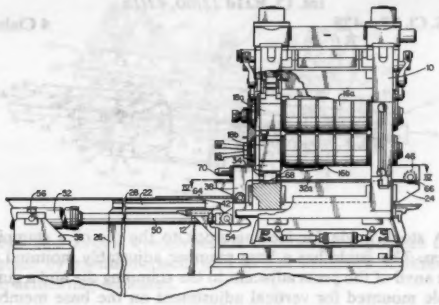
ROLL CHANGING APPARATUS

Donald Sieurin, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Dec. 5, 1969, Ser. No. 882,677
Int. Cl. B21b 31/08
U.S. Cl. 72—239 11 Claims

An apparatus for changing work rolls in a rolling mill. The apparatus includes a carriage assembly mounted on tracks for movement into and out of a roll housing through a housing

window. The carriage assembly is adapted to receive and carry a roll package made up of a plurality of work rolls rotatably supported between bearing chocks. The tracks are so arranged that upon movement of the carriage assembly and roll



package carried thereon into the housing, the carriage assembly is gradually lowered to transfer the roll package onto the housing, with the result that the roll package is solely supported by the housing when operatively contained therein.

3,675,457

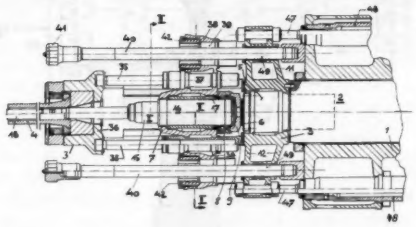
METAL-TUBE EXTRUSION PRESS

Horst Hans Groos, Metzkausen, Germany, assignor to Schloemann Aktiengesellschaft, Duesseldorf, Germany

Filed Nov. 17, 1969, Ser. No. 877,146

Int. Cl. B21c *23/02*

U.S. Cl. 72—265 **3 Claims**



A metal-tube extrusion press, provided with a drive, arranged in the main extrusion piston, and movable independently towards the press ram, for the piercing mandrel, which is held in a piercing-mandrel crossbar axially displaceable in the crossbeam and which projects with lateral jibs or extensions from the crossbeam, and is axially adjustable relatively to the latter, wherein jibs or extensions, provided with abutments, can be secured relatively to the extrusion cylinder by means of abutment rods rigidly connected with the latter, with the abutments being rockable outwards in the jibs transversely to the direction of extrusion, out of reach of the abutments on the abutment rods.

3,675,458

HYDRAULIC SECTION-STRETCHING MACHINE

Dieter Veltjens, Osterath, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

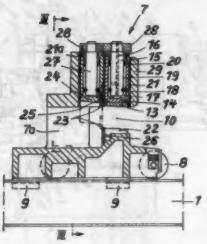
Filed Jan. 20, 1970, Ser. No. 4,307

Claims priority, application Germany, Jan. 25, 1969, P 19 03 744.6

Int. Cl. B21d *43/28*

U.S. Cl. 72—294 **4 Claims**

A hydraulic section-stretching machine, having a cylinder and piston co-operating with a stretching grip, a longitudinally movable but arrestable counter-grip having clamping jaws operative perpendicularly to the section-stretching axis, the counter-grip being provided with two C-shaped apertures in the same plane, perpendicular to one another, one facing the



stretching grip to accommodate the section to be stretched, and the other facing the stretched material to be transported, and a severing means close to the clamping jaws, acting in a vertical plane perpendicular to the stretching axis.

3,675,459

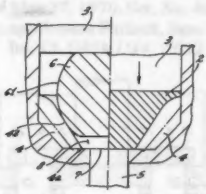
METHOD FOR MANUFACTURING BEVEL GEARS

Fritz Dohmann, Rontgenstrasse 34, 851 Furth, Germany

Continuation-in-part of Ser. Nos. 788,434, Jan. 2, 1969, abandoned, and Ser. No. 15,807, March 2, 1970, abandoned. This application Feb. 3, 1971, Ser. No. 112,305

Int. Cl. B21k *1/30*

U.S. Cl. 72—352 **14 Claims**



A method for manufacturing bevel gear is disclosed according to which a workpiece is prepared for placement into a suitable die and to have convex contour tangent to the cone defined by the root circles of the bevel gear to be made, the axial end face of the workpiece has diameter about equal to or smaller than the smallest root circle of the bevel gear.

3,675,460

FOUR-SLIDE MACHINE WITH IMPROVED MANDREL FOR PRODUCING BEARINGS AND THE LIKE

Erman V. Cavagnero, Torrington, Conn., and Joseph F. Loftus, Springfield, Ohio, assignors to Torin Corporation, Torrington, Conn.

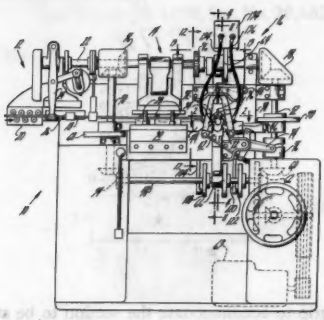
Division of Ser. No. 721,672, April 16, 1968. This application June 8, 1970, Ser. No. 44,483

Int. Cl. B21d *41/00*

U.S. Cl. 72—399 **8 Claims**

A high production machine of the vertical four-slide type for intermittently advancing strip stock, severing blanks therefrom, forming the same into bearing races and welding end portions thereof together. The machine has a projecting horizontal mandrel with three work stations there along respectively for preforming, forming, and preheating and/or welding. A cut-off anvil, transfer pins, broaching tools, and an expandable mandrel section are provided all with rear motion

drive action and a welding mechanism is adapted for both preheat and weld operation adjacent the expandable mandrel sec-



tion. A bearing race discharge track extends from the welding station to an induction furnace.

3,675,461

RIVET HEAD ARRANGEMENT FOR A WOBBLE RIVETING MACHINE

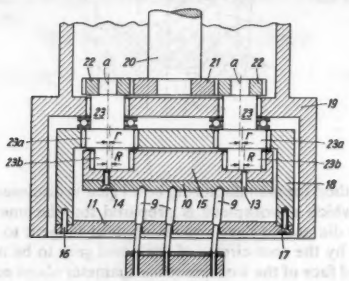
Claus Berndt, Werkhofstrasse 3, Biberist, Switzerland

Filed Oct. 5, 1970, Ser. No. 77,835

Claims priority, application Switzerland, Oct. 24, 1969, 15918/69

Int. Cl. B21j *15/12*

U.S. Cl. 72—406 **8 Claims**



A rivet head arrangement for a wobble or tumble riveting machine comprising a plurality of identical wobble rivet tools, the axes of which are in substantial parallelism with one another. A drive member is engaged by the head end of the wobble rivet tools, each such head end being remote from the effective or working end of these wobble rivet tools. The drive member is capable of transmitting to the wobble rivet tools a force directed towards their working ends. Further, a drive mechanism imparts to this drive member a translatory circular movement such that all of the wobble rivet tools carry out wobble movements, the centers of which are situated at their working ends. Also there is provided a support member upon which the wobble rivet tools at least are then supported by means of an intermediate portion when such wobble rivet tools do not bear upon the rivet ends to be deformed or formed.

3,675,462

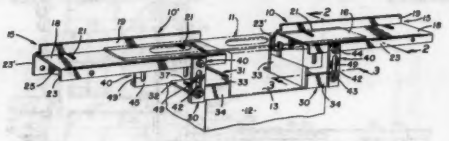
ADJUSTABLE STAMPING PRESS STOCK GUIDE

Lucien G. Ponce, 1346 Chestnut Boulevard, Cuyahoga Falls, Ohio

Filed Oct. 8, 1970, Ser. No. 79,211

Int. Cl. B21d *22/00, 43/16*

U.S. Cl. 72—428 **4 Claims**



A stock guide for feeding stock to the die of a stamping press. The guide has a base member adjustably mounted on the anvil of the press adjacent to the stamping die and a guide table mounted for vertical adjustment on the base member, with an aligning bar adjustably mounted on the table.

3,675,463

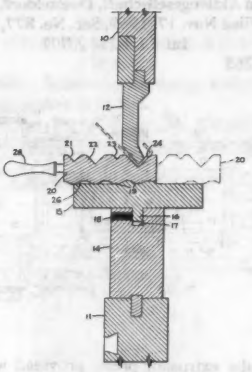
SHIFTABLE PRESS BRAKE DIE

Frederick E. Munschauer, Jr., Eggertsville, and George H. Trautman, Jr., Kenmore, both of N.Y., assignors to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed March 29, 1971, Ser. No. 128,692

Int. Cl. B21j *13/02*

U.S. Cl. 72—448 **7 Claims**



A press brake die for forming right angle bends in metal sheets wherein the die has several longitudinal parallel V-grooves of various depths to adapt the same for forming bends in sheets of various thicknesses. The under surface of the die and the upper surface of the die support have longitudinal complementary corrugations of a pitch equal to the spacing of the V-grooves of the die whereby the corrugations of the die and support may be interfitted with the die in various transverse positions to register any selected V-groove thereof with the punch carried by the ram of the press brake.

3,675,464

PORTABLE TESTING AND CHECKING APPARATUS WITH ADJUSTABLE MOUNTS

Kenneth R. Larson, Des Plaines, Ill., assignor to Snap-On Tools Corporation, Kenosha, Wis.

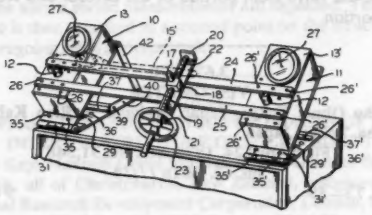
Filed Jan. 18, 1971, Ser. No. 107,037

Int. Cl. G01l *25/00*

U.S. Cl. 73—1 C **8 Claims**

A torque wrench tester is mounted upon an adjustable bracket so that it may be changed from one angle to another

with respect to horizontal. The purpose is to check torque wrenches at a plurality of positions because their calibration may vary from one to another. The embodyment shown combines two torque wrench testers of different capacities connected by common spacer bars so that wrenches of different capacities may be tested.



3,675,465

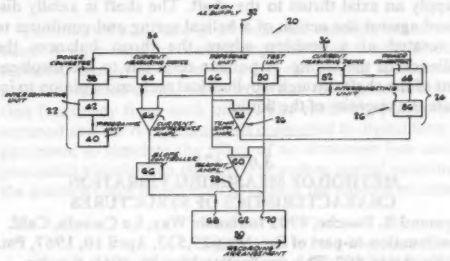
APPARATUS AND METHOD FOR DIFFERENTIAL THERMAL ANALYSIS

Gunter Sommer, 169 Barkston Drive, Randburg, and Hans Walter Sander, 84 Shakespeare Road, Johannesburg, both of Republic of South Africa

Continuation of Ser. No. 750,623, Aug. 6, 1968, abandoned. This application Oct. 7, 1969, Ser. No. 864,491

Int. Cl. G01n *25/00*

U.S. Cl. 73—15 B **11 Claims**



A method of thermal analysis which includes the steps of controlling the temperatures of at least two units to correspond to a predetermined temperature program, and of measuring the power required by each unit to cause its temperature to correspond to the program.

3,675,466

SAMPLING VALVE AND SYSTEM FOR THE DETECTION OF PREDETERMINED COMPOUNDS IN AIR

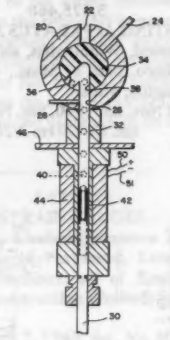
Amos Linenberg, Rehovot, Israel, assignor to Hydronautics-Israel, Ltd., Rehovot, Israel

Filed Aug. 19, 1970, Ser. No. 65,215

Int. Cl. G01n *1/22, 31/08*

U.S. Cl. 73—23.1 **20 Claims**

A sampling valve for use with a chromatographic column or any other appropriate detection device for enabling the detection of predetermined compounds in an ambient medium, such as air. The valve includes a housing member having a plurality of apertures therein for enabling respective communication with at least a carrier medium, the ambient medium and the chromatographic column. A movable valve body member is mounted within the housing and is provided with a plurality of apertures for selective communication with predetermined ones of the housing member apertures. A platinum gauze member is retained within a predetermined one of the valve body member apertures and is selectively exposed to the ambient medium. The valve body member is then moved and the platinum gauze member is heated to desorb the predetermined compound in the presence of the carrier medium, such as helium, and the carrier medium together with the predetermined compound are passed through the chromatographic column to enable detection of the presence of the predetermined compound.



3,675,467

METHOD AND DEVICE FOR MEASURING THE TEMPERATURE OF MATERIAL IN A ROTATORY FURNACE

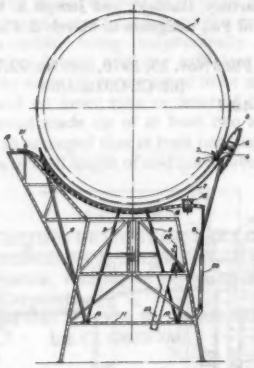
Bertel Myreen, Turku, Finland, assignor to Paraisten Kalkki Oy, Parainen, Finland

Filed May 27, 1970, Ser. No. 40,812

Claims priority, application Finland, June 3, 1969, 1663/69

Int. Cl. G01k *1/14, 13/12*

U.S. Cl. 73—351 **8 Claims**



A small portion of the hot material in a rotatory furnace is poured out through an opening in the furnace wall during a period of the rotation into a measuring vessel and the temperature of the material is measured before any substantial cooling of the material has time to occur.

Transversely under the rotatory furnace are guiding rails movable between two positions. Connected to a stand on a base attached to the furnace is a device for opening and closing the furnace wall opening, and an upwardly open measuring vessel movable along the guides back and forth. In the measur-

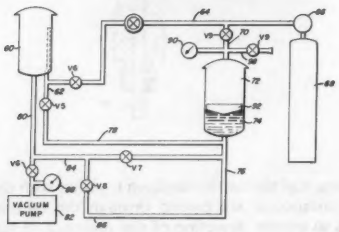
ing vessel are a thermocouple, an engaging dog attached to the furnace to displace the measuring vessel in synchronism with the furnace wall opening, and means for emptying the vessel before a new collection takes place.

3,675,468

LEAK TESTING APPARATUS AND METHOD

Vincent C. Caccamesi, Wilmington, and Aaron C. Der Marderosian, Marlboro, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 25, 1970, Ser. No. 92,624
Int. Cl. G01m 3/20
U.S. Cl. 73—40.7 6 Claims



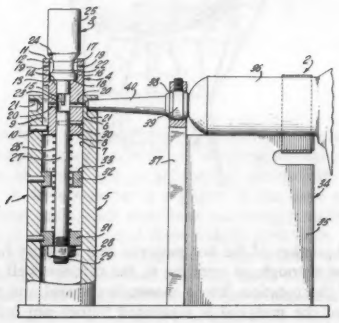
A method and apparatus for conditioning devices such as electronic components for fine and gross leak testing, the apparatus comprising means for introducing a fluid under pressure to the devices whereby the fluid will be forced into the interiors of leaky devices, and means for thereafter removing the fluid, while reclaiming same, whereupon the devices may be tested by conventional sniffing or weighing methods to determine those which leak.

3,675,469

APPARATUS FOR DETECTING AEROSOL LEAKAGE

Carl H. Macartney, Hatfield, and Joseph A. Bawduniak, Ambler, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 25, 1970, Ser. No. 92,736
Int. Cl. G01m 3/04
U.S. Cl. 73—40.7 5 Claims



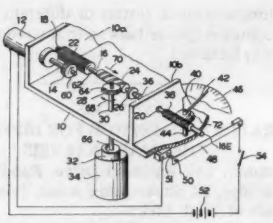
A device for inspecting aerosol units for leakage at the valve stem and the crimp between the container and the valve assembly. This device includes hollow support means to hold the aerosol unit and means to separate the valve stem portion and the crimp portion of said unit. This device also includes two apertures in the side wall of the support means, one of said apertures being above and the other being below the means to separate the valve stem portion of the aerosol unit from the crimp portion.

3,675,470

VISCOMETER

Toshihiko Ohno, Tokyo, Japan, assignor to Rion Kabushiki Kaisha, Tokyo, Japan

Filed April 24, 1970, Ser. No. 31,548
Int. Cl. G01n 11/16
U.S. Cl. 73—59 9 Claims



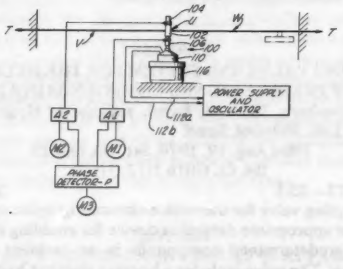
A rotor driven by a shaft rotated at a fixed speed is subject to the drag of a liquid the viscosity of which is to be measured to apply an axial thrust to the shaft. The shaft is axially displaced against the action of a helical spring and continues to be rotated at a position where the thrust balances the resilience of the spring. A pointer responds to the displacement of the shaft through a cylindrical rack and a pinion to indicate the viscosity of the liquid.

3,675,471

METHOD OF MEASURING VIBRATION CHARACTERISTICS OF STRUCTURES

Raymond R. Bouche, 4902 Indianola Way, La Canada, Calif.

Continuation-in-part of Ser. No. 629,532, April 10, 1967, Pat. No. 3,446,907. This application May 26, 1969, Ser. No. 827,556
Int. Cl. G01n 29/00
U.S. Cl. 73—67 13 Claims



A testing device having a static mass equal to or less than the static mass of the structure to be tested in the local region of attachment, acting as a rigid mass at all frequencies, and having a measuring device portion which has a dynamic mass less than about ten times the least value of dynamic mass of the structure, is rigidly mounted on a test structure. The test-

ing device is then vibrated and the resulting force which is applied to the test structure, the resulting acceleration of the test structure, and the phase angle between the force and acceleration are measured. The frequency of vibration is then varied and the above stated measurements are repeated. The testing device is then attached to a second point on the structure and the foregoing steps are repeated.

3,675,472

APPARATUS AND METHOD FOR IMAGES OF THE INTERIOR STRUCTURE OF SOLID OBJECTS

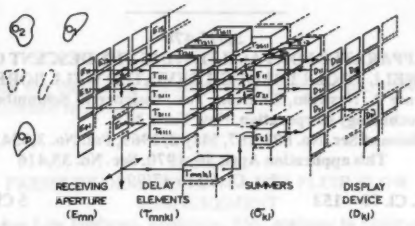
Leslie Kay; Maxwell Glynn Maginness, and Graham Bramwell Cook, all of Christchurch, New Zealand, assignors to National Research Development Corporation, London, England

Filed Dec. 11, 1969, Ser. No. 884,137

Claims priority, application New Zealand, Dec. 12, 1968, 154,800

Int. Cl. G01n *29/00*

U.S. Cl. 73—67.5 R **5 Claims**



The interior structure of objects, for example metal or tissues, is examined by insonifying the object and detecting reflected ultrasonic waves in a large receiving transducer at positions spaced at half wave-lengths of the highest insonification frequency from each other. The receiving positions are scanned and the received signals converted to digital form and processed to simulate the effect of an ultrasonic lens and the processed signals then displayed. Random spatial sampling of the positions may be effected to reduce the amount of data.

3,675,473

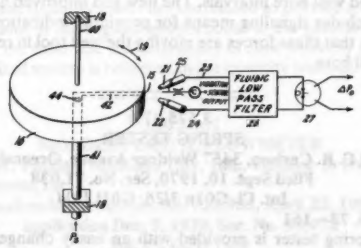
OPEN-LOOP FLUIDIC ANALOG ACCELEROMETER

Robert A. Kantola, and Willis A. Boothe, both of Scotia, N.Y., assignors to General Electric Company

Division of Ser. No. 642,116, May 29, 1967, Pat. No. 3,540,268. This application July 18, 1969, Ser. No. 871,177

Int. Cl. G01h *1/10;* **G01p** *15/02*

U.S. Cl. 73—70.1 **4 Claims**



Apparatus for sensing acceleration and generating an analog-type pressurized fluid signal proportional to the magnitude of the associated acceleration event. A friction-free spring-mass device in the form of a flexure-mounted inertial mass includes a hollow, elongated spring member of the cantilever beam type having a first end rigidly fixed in position and a second unsupported end upon which the acceleration-sensitive inertial mass is mounted for sensing linear motion acceleration. The hollow portion of the spring member issues a fluid jet from the second unsupported end directed at fluid receivers, the flexure of the spring member causing distribution of the jet between the receivers in proportion to the magnitude of the acceleration. Angular motion acceleration is sensed by utilizing a cylindrical inertial mass connected along its longitudinal axis to two torsional spring members rigidly fixed in position at their far ends such that the cylindrical mass is subject to rotation in the presence of an angular motion acceleration.

3,675,474

STRAIN GAUGES

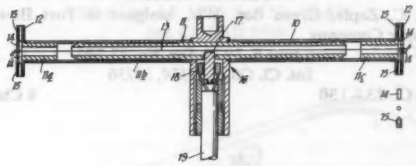
Roger Drury Browne, London; Laurence Henry McCurrich, Berkshire; John David Parkinson, London, and Edward Charles Heffer, Middlesex, all of England, assignors to Taylor Woodrow Construction Limited, Southall, Middlesex, England

Filed March 7, 1969, Ser. No. 805,182

Claims priority, application Great Britain, March 8, 1968, 11,556/68

Int. Cl. G01b *5/30*

U.S. Cl. 73—88 E **7 Claims**



A strain gauge incorporating a length of wire maintained under a predetermined tension and an electric magnetic device for plucking the wire at substantially the mid point of its length, the wire being disposed in a hollow spacer tube assembly comprising an outer tube formed of a material such as ebonite which while being longitudinally compressible nevertheless has a lateral stiffness sufficient to withstand forces which may normally be expected to be applied thereto when in use, and an inner tube or liner of brass or other equivalent material made up of at least two axially aligned lengths of tube so arranged that at least one gap or space will be present in the overall length of said inner tube or liner.

3,675,475

MATERIAL TESTING DEVICE FOR THE CONTINUOUS MEASUREMENT OF STRESS RELAXATION

Warren D. Weinstein, Huntington Station, N.Y., assignor to Sperry Rand Corporation

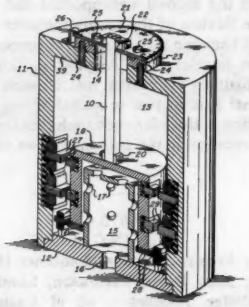
Filed May 25, 1970, Ser. No. 40,032

Int. Cl. G01b *7/16*

U.S. Cl. 73—89 **3 Claims**

An apparatus in which one end of a material test specimen is affixed to a calibrated plate on a stationary housing and the other end is affixed to a rotatable element within the housing. A calculated stress is applied to the test specimen by rotating the calibrated plate through a specific angular displacement. An electromagnetic spring field applies a torque proportional to rotational displacement of the test specimen. The angular displacement is sensed by an electromagnetic pick-off which controls a torque motor that applies a sufficient torque to the rotatable element to maintain it at a null position. Any stress relaxation within the specimen results in movement of the rotatable element. Such movement is sensed by the electromagnetic pick-off which generates an error signal that is

applied to the torque motor which returns the rotatable element to its null position. The error signal is a measure of the



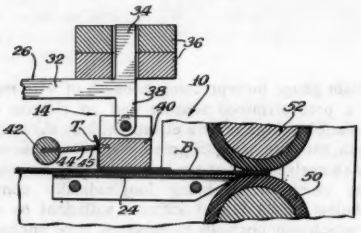
stress relaxation within the material and is routed to a recorder.

3,675,476

INK BLEED TESTER

Paul C. Zapfe, Green Bay, Wis., assignor to Fort Howard Paper Company

Filed June 5, 1970, Ser. No. 43,703
Int. Cl. G01n 33/34, 33/36
U.S. Cl. 73—150 6 Claims



A device for testing printed fibrous material, such as paper napkins and the like for resistance to ink bleed. The device includes a base and a support on the base for receiving the material to be tested while pressure is applied to the material, when it is stationary, for determining bleed resistance of the fibrous test material as it is undergoing static pressure. Means are also provided for pulling adjacent material through the receiving means while pressure is being applied to the test material, so as to determine the resistance of the test material to dynamic pressure or rubbing.

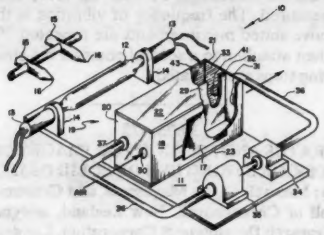
3,675,477

TESTING METHOD AND DEVICE USING FILTERED ULTRA VIOLET RADIATION

Richard A. Allen, Lincoln, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Oct. 29, 1970, Ser. No. 85,207
Int. Cl. G01b 19/08; H01j 5/16
U.S. Cl. 73—150 6 Claims

This invention relates in general to an improved and efficient technique for providing ultra violet radiation and particularly to an apparatus which incorporates this ultra violet radiation as a source for testing color fastness or fading characteristics of various materials simulating the suns's properties. The ultra violet radiation is limited to a narrow effec-



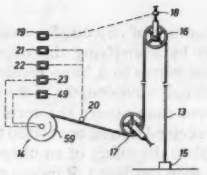
tive region by the use of specially selected liquid and glass filters spaced from the light source.

3,675,478

APPARATUS FOR FACILITATING THE DESCENT OF WELL TOOLS THROUGH DEVIATED WELL BORES

Horace A. Nystrom, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 821,187, May 2, 1969, Pat. No. 3,554,284.
This application April 30, 1970, Ser. No. 33,416
Int. Cl. E21b 47/00
U.S. Cl. 73—152 5 Claims



In the preferred embodiment of the new and improved apparatus disclosed herein, a well tool is dependently suspended from an electrical logging cable that is uniquely constructed to withstand limited axial compressive loading without undue lateral bending. In this manner, by selectively moving the suspension cable downwardly from the surface, corresponding axial compressive forces are developed in the lower portion of the cable, which forces are, in turn, imposed on the well tool for assisting its continued descent through substantially-deviated well bore intervals. The new and improved apparatus also includes signaling means for providing indications at the surface that these forces are moving the well tool in relation to the well bore.

3,675,479

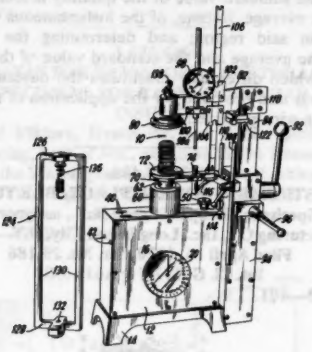
SPRING TESTER

Harold C. R. Carlson, 3457 Weidner Avenue, Oceanside, N.Y.

Filed Sept. 10, 1970, Ser. No. 71,038
Int. Cl. G01n 3/26; G01l 1/04
U.S. Cl. 73—161 6 Claims

A spring tester is provided with an easily changeable and readily adjustable load cell assembly for indicating the force exerted by a spring. A second indicator provides a measurement of the deflection of a spring under a given load. In combination with the load cell assembly, means in the form of an adjustable force gage positioned intermediate the sample under test and the load cell are provided for measuring the compression or extension of a spring at a given force. Com-

pensating means are provided for the force gage. The apparatus also includes quickly adjustable, manually operated



means for measuring the force of a spring at two different compressed lengths.

3,675,480

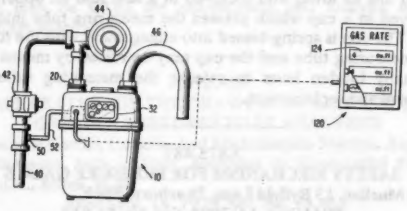
PRESSURE DEMAND METER FOR FLUID FLOW MEASUREMENT

Stephen Lew Feldman, Baltimore, Md., assignor to Envirometrics, Inc.

Continuation-in-part of Ser. No. 17,073, March 6, 1970. This application June 11, 1970, Ser. No. 45,329

Int. Cl. G01f *1/02*

U.S. Cl. 73—199 8 Claims



The meter includes a quantity meter, pressure measuring device and a register. The outputs of the pressure measuring device and quantity meter are correlated to provide a numerical readout at the register proportional to the pressure of the fluid in the fluid line and a quantity of flow whereby demand on the fluid system is reflected in the quantity readout.

3,675,481

MOLDED PLASTIC FLOWMETER

James W. Phillips, Michigan City, Ind., assignor to Dwyer Instruments, Inc

Continuation-in-part of Ser. No. 722,931, April 22, 1968. This application Dec. 7, 1970, Ser. No. 95,472

Int. Cl. G01f *1/00*

U.S. Cl. 73—209 14 Claims

A flowmeter with the tapered tube and conduit fittings specially formed as a one-piece plastic construction to retard breakage and to minimize fragmentation. A sectionally formed mounting plate assembly has pipe threaded bushings mounted to insert into and thereby connect with the conduit fittings and integral flowmeter tube. The mounting plate is sectionally formed so that it can expand and contract with expansion and contraction of the flowmeter tube. The mounting

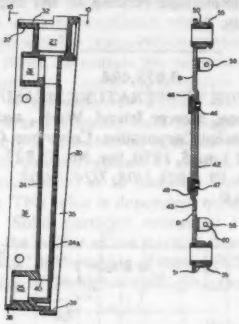


plate takes much of the piping connection strains without transmitting these to the flowmeter tube.

3,675,482

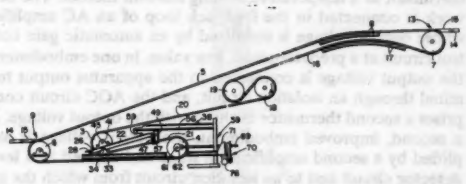
AUTOMATIC TENSION SENSING APPARATUS FOR BELT CONVEYOR

John H. Hewitt, Tallmadge, Ohio, assignor to Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 14, 1970, Ser. No. 80,636

Int. Cl. G01l *5/06*

U.S. Cl. 73—144 8 Claims



A sensitive measurement of tension in a belt is provided by movement of a belt carrying pulley mounted on a pivoted arm extending from the pivot to a position beyond the pulley where a calibrated spring permits limited movement of the arm in opposition to belt forces on the pulley. The movement of the arm actuates limit switches which are operatively connected to a take-up pulley mechanism for maintaining the desired tension in the belt.

3,675,483

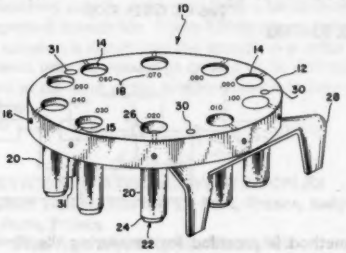
WATER SURFACE DEPTH INSTRUMENT

Quinton C. David, IV, 1364 N. Queen Street, Hampton, Va.

Filed Feb. 23, 1971, Ser. No. 117,984

Int. Cl. G01f *23/02*

U.S. Cl. 73—327 10 Claims



An instrument for measuring the depth of liquid on a planar surface having particular application to measuring the depth

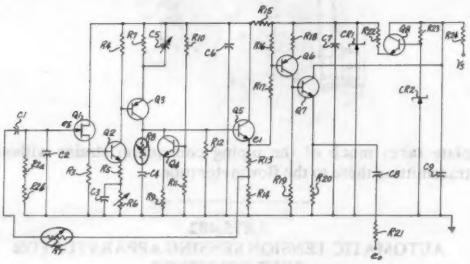
of water on an airport runway. The instrument can be set on the runway in depth variations of 0.01 inch and less surface and will give an immediate reading of the depth of water covering the runway.

3,675,484

APPARATUS FOR TEMPERATURE MEASUREMENT

Arthur M. Pederson, Mercer Island, Wash., assignor to The Battelle Development Corporation, Columbus, Ohio

Filed June 5, 1970, Ser. No. 43,827
Int. Cl. G01k *1/08, 7/24, 13/02*
U.S. Cl. 73—362 AR **17 Claims**



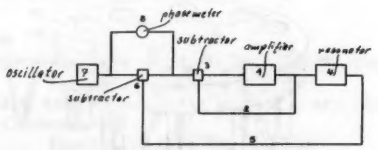
An improved apparatus for temperature measurement which minimizes sensing element self-heating error and instrument ambient heating error when used as an oceanographic thermometer includes a frequency-selective network having a thermistor as a temperature sensing element thereof. The network is connected in the feedback loop of an AC amplifier whose output voltage is stabilized by an automatic gain control circuit at a predetermined, low value. In one embodiment, the output voltage is connected to the apparatus output terminal through an isolation circuit, and the AGC circuit comprises a second thermistor in shunt with the output voltage. In a second, improved embodiment, the output voltage is amplified by a second amplification stage and applied to a level detector circuit and to an isolation circuit from which the apparatus output is taken. The level detector in turn controls the impedance of a field effect transistor in shunt with the output voltage. The requirements for a successful oceanographic thermometer design are discussed and related in detail to the embodiments noted, and the performance of working models of each embodiment with regard to these requirements is set forth.

3,675,485

METHOD AND APPARATUS FOR MEASURING VARIATIONS IN A QUANTITY WITH RESPECT TO A KNOWN REFERENCE VALUE

Julien M. Loeb, Cloud, France, assignor to Compagnie Generale De Ceophysique, Paris, France

Filed June 18, 1969, Ser. No. 834,397
Claims priority, application France, June 19, 1968, 15535
Int. Cl. G01v *7/00*
U.S. Cl. 73—382 **7 Claims**



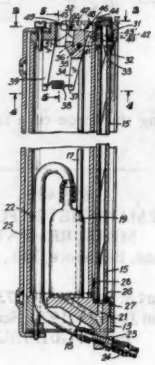
A method is provided for measuring the deviations of a quantity from the standard value for the same quantity, in the presence of stray interferences of greater amplitude and higher frequency than the variations to be measured. The procedure for effecting the method consists essentially in measuring the instantaneous values of the aforesaid quantity; eliminating all instantaneous values falling outside of a limited region of amplitude variations of the aforesaid quantity, inside of which the standard value of the quantity is located; determining the average, in time, of the instantaneous values situated within said region; and determining the difference between the average and the standard value of the aforesaid quantity, which difference constitutes the deviation sought. Apparatus is also provided for the application of the method to vibrating-wire gravimetry.

3,675,486

INSTRUMENT WITH REPLACEABLE TUBE

Irving A. Speelman, Roslyn Heights, N.Y., assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y.

Filed April 16, 1970, Ser. No. 29,186
Int. Cl. G01l *7/18;* **A61b** *5/02*
U.S. Cl. 73—401 **6 Claims**



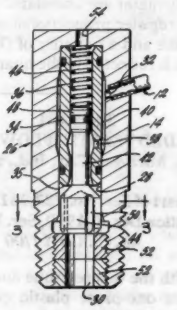
A sphygmomanometer having a replaceable measuring tube which has its lower end received in a seat and its upper end received in a cap which presses the measuring tube into the seat. The cap is spring-biased into engagement with the top of the measuring tube and the cap may be raised by means of a normally hidden lever to release the measuring tube for removal and replacement.

3,675,487

SAFETY MECHANISM FOR PRESSURE GAUGE

Otto Mueller, 13 Byfield Lane, Dearborn, Mich.

Filed Sept. 14, 1970, Ser. No. 71,843
Int. Cl. G01l *7/04*
U.S. Cl. 73—414 **2 Claims**



Apparatus for limiting the maximum pressure to which a pressure gauge can be subjected. A spring biased differential

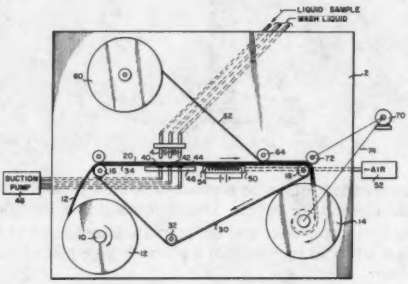
pressure valve is maintained in a normally opened position in the inlet fitting of the pressure gauge so that the gauge will be protected from exposure to pressures in excess of its rated capacity.

3,675,488

APPARATUS FOR TRANSPORT AND STORAGE OF LIQUID SPECIMENS FOR RADIO-IMMUNOASSAY FOR INSULIN

Josef Karel Viktora, Hyattsville, and Albert Jozef Baukal, Silver Spring, both of Md., assignors to The Research Foundation of the Washington Hospital Center, Washington, D.C.

Filed Sept. 11, 1969, Ser. No. 857,034
Int. Cl. G01n 1/00
U.S. Cl. 73—421 R 2 Claims



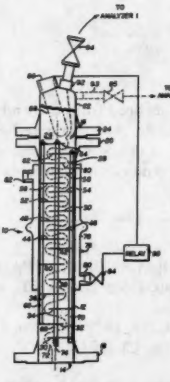
Samples from a number of individual liquid specimens containing varying and unknown amounts of insulin are made radioactive and are sequentially supplied to a continuously moving paper strip to impregnate the strip with separate spaced specimens along its length, which are then washed and dried. Cellophane tape is continuously adhesively united to the strip bearing the impregnated and dried specimens and the composite strip and tape are stored in a roll from which the strip may be taken for examination and analysis of the separate specimens.

3,675,489

APPARATUS FOR THE DRAWING OF SAMPLES OF GASEOUS MIXTURES TO BE ANALYZED

Francesco Garilli, Catania, and Michelangelo Marino, Augusta (Siracusa), both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Sept. 18, 1970, Ser. No. 73,462
Int. Cl. G01n 1/22
U.S. Cl. 73—421.5 R 8 Claims



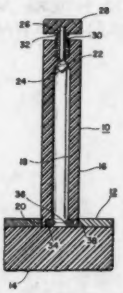
An apparatus for drawing samples of gaseous mixtures to be analyzed, such as the gaseous mixtures present at the outflow of a cracking furnace, includes a plurality of baffles arranged longitudinally inside a hollow columnar passageway so as to provide a serpentine pathway for the gaseous mixture flowing therethrough. A thermoregulator, which comprises a sleeve or jacket through which a temperature controlling fluid such as air or steam flows, surrounds the columnar passageway substantially along its length to regulate the temperature therewithin. A thermometer located at the head of the passageway, near a sampling duct through which the desired gaseous mixture is passed to an analyzer, controls the flow of fluid within the thermoregulator by sensing the temperature of the passing mixture so as to maintain this temperature at a desired value. This value is dependent on the fraction desired for analysis. Solid particles contained in a mixture are deposited on the baffles as the mixture flows through the serpentine pathway. Self-washing of these baffles is accomplished by condensation of the higher boiling fractions.

3,675,490

DETECTION SYSTEM FOR INSECTICIDES

Arnold W. Blomquist, St. Paul, Minn., assignor to Sci-Med, Inc., Minneapolis, Minn.

Filed June 8, 1970, Ser. No. 44,136
Int. Cl. G01n 1/04
U.S. Cl. 73—425 5 Claims



The invention relates to a kit for obtaining samples in solution form of spills of suspected organo-phosphorous insecticides. An essential part of the kit is a small sponge saturated with a solvent such as chloroform. The sponge is attached to a tubular handle and, in operation, the sponge is pressed down on a small quantity of the suspected insecticide which becomes dissolved into the solvent to form a solution containing the suspected insecticide. Upon lifting the sponge a portion of the solution is drawn into the sponge. A portion of the solution drawn into the sponge is caused to be directed into and retained in the bore of the handle where it is then available for analysis.

3,675,491

DEVICE FOR WITHDRAWING SAMPLES

Philippe Robert Guillet, Joinville Le Pont, France, assignor to L'Oreal, Paris, France

Filed Nov. 27, 1970, Ser. No. 92,989
Claims priority, application France, Jan. 14, 1970, 7001231
Int. Cl. G01n 1/12
U.S. Cl. 73—425.4 R 7 Claims

A device for withdrawing samples comprises a sample chamber provided with a lid spring biassed to close the

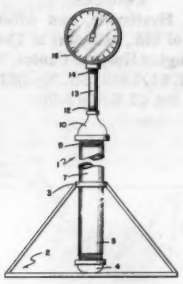
chamber. The chamber is removably attached to a supporting tube by means of a collar fixed to the tube, and a rod slidably

mounted in the tube cooperates with a lever attached to the lid so that the lid may be opened by operating the rod.

3,675,492
MEASURING SYRINGE
Luis H. Tejera, Central Islip, N.Y., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.
Filed June 10, 1970, Ser. No. 45,133
Int. Cl. G01n *1/14*
U.S. Cl. 73—425.6 **16 Claims**

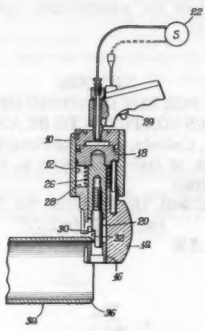
A measuring syringe having an elongated plastic body including a narrow elongated passage opening into one end of the body which removably receives a hollow disposable tip for drawing and expelling a liquid into the tip by means of an elongated piston slidable in the passage. A second enlarged passage in the upper body section which opens into the opposite end of the body slidably receives an actuating stem whose bottom is connected to the piston and whose top projects from the body and is provided with an apertured flange for finger operation. A predetermined quantity of liquid may be drawn and expelled; the quantity being measured by stop members projecting from the actuating stem to be engageable with a stop surface on the body in the second passage. During manufacture, the stem is formed with a plurality of stops spaced along its length and corresponding to different quantities of liquid to be measured. To accomodate the stop members, an elongated slot is formed through one side wall of the body which receives the stop members and also provides visibility thereto.

3,675,493
GROUT EXPANSION PRESSURE METER AND METHOD FOR USING SAME
David G. Hicks, 202 Jones Valley Drive S.W., Huntsville, Ala., and Lawrence P. Varner, 714 Pettus St., Selma, Ala.
Filed May 4, 1970, Ser. No. 33,999
Int. Cl. G01l *7/00*; G01d *21/00*
U.S. Cl. 73—432 R **2 Claims**



The invention relates to a grout expansion pressure meter and the method for its use. Grout containing a fluidifier is poured into a container and the pressure is measured at various time intervals by means of a pressure gage placed on the container.

3,675,494
PIPE TESTING
John H. Becque, Glen Ellyn, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Sept. 23, 1970, Ser. No. 74,559
Int. Cl. G01n *3/28*
U.S. Cl. 73—432 R **4 Claims**

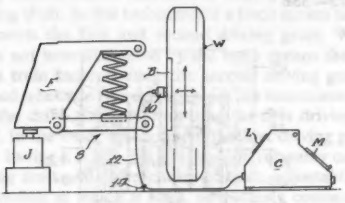


A small segment is sheared from the end of a cast iron pipe and examined for cracks. An uncracked specimen indicates ductile pipe, whereas a cracked specimen indicates that the pipe does not meet American Standards Association standards.

3,675,495
WHEEL BALANCING APPARATUS
Charles W. MacMillan, Rock Island, Ill., assignor to Applied Power Industries, Inc.
Filed Feb. 25, 1970, Ser. No. 14,073
Int. Cl. G01m *17/02*
U.S. Cl. 73—466 **9 Claims**

Method and apparatus for balancing vehicle wheels by stroboscopic light balancing means wherein the vehicle wheel

is freely suspended and driven up to high speed, the vibrations of the rotating wheel are sensed, and the stroboscopic light is flashed on the wheel in timed relationship to the vibrations thereof to given an indication of the location of the imbalance causing the vibration; characterized by improved pick-up means consisting essentially of a housing adapted to be adhered to a part of the vehicle that is normally stationary but which vibrates responsively to the vibrations caused by wheel



imbalance, and accelerometer means mounted in said housing having a plane of sensivity adapted to be disposed in the vertical direction for picking up static imbalance and in the horizontal direction for picking up dynamic imbalance; and further characterized by derivation of signals from said accelerometer means at a position remote from the rotating wheel, coupling each derived signal to a pulse counter for determining wheel speed, and determining wheel imbalance at a pre-selected speed.

3,675,496

CHANNEL SELECTING DEVICE

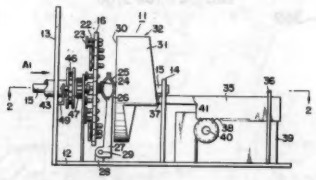
Atsuhiro Yasuda, Kawasaki, and Koichi Kobayashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 25, 1970, Ser. No. 66,827

Claims priority, application Japan, Aug. 26, 1969, 44/80497; March 10, 1970, 44/22710

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.6 **13 Claims**



A channel selecting device for UHF television channels comprises a channel selecting shaft, a channel selecting cylinder axially slidably mounted on the channel selecting shaft and having a helical cam surface on one side, means for stepwisely rotating the channel selecting shaft and channel selecting cylinder, a plurality of circumferentially and equally spaced apart fine tuning screws, fine tuning means for selectively operating one of the screws to move it in the axial direction in accordance with the axial movement of the selectively operated fine tuning screw and with the circumferential displacement of the helical cam surface and channel selector operating means normally urged against one side surface of the channel selecting cylinder to follow the axial movement thereof.

3,675,497

SLIDING SHAFT POWER TAKE OFF SPEED CHANGE

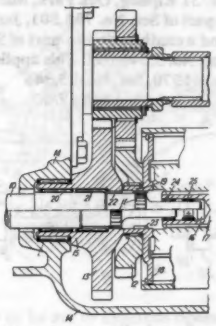
Alfred William Thomas, Earl Shilton, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Jan. 15, 1971, Ser. No. 106,823

Claims priority, application Great Britain, Jan. 24, 1970, 3,557/70

Int. Cl. F16h *37/00;* **F16d** *11/04, 1/06*

U.S. Cl. 74—15.4 **11 Claims**



Apparatus is provided for the purpose of driving a power-take-off shaft at one of two speeds the change of speed being effected by moving the shaft and its bearing housing longitudinally of the shaft so that a gear on the shaft meshes with one or other of two drive gears, the arrangement being that the housing is retained in one or other of the two positions by a spring urged ball locking device which can be easily unlocked to permit such movement.

3,675,498

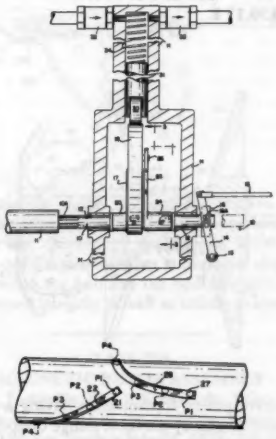
TIMED VARIABLE OUTPUT PUMP

Charles H. Cuda, 9405 N.W. 9th Ave., Vancouver, Wash.

Filed Aug. 24, 1970, Ser. No. 66,426

Int. Cl. F16h *25/08*

U.S. Cl. 74—55 **4 Claims**



A pump having a piston of variable stroke driven by a pair of cooperating eccentrics both of which are adjustably carried

by a single driven shaft. The shaft is provided with helical grooves within which ride followers for positioning of the eccentrics upon axial shaft movement. The outer eccentric functions as a cam to drive a follower and pump piston. The eccentricity of the outer eccentric may be varied by moving the outer eccentrics center progressively towards the axis of the shaft to adjust the stroke of the pump piston.

3,675,499

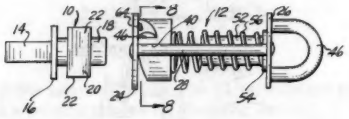
COUPLING

Andre Marosy, 24731 Kipling, Oak Park, Mich.

Continuation-in-part of Ser. No. 795,501, Jan. 31, 1969, Pat. No. 3,540,087, and a continuation-in-part of Ser. No. 782,176, Dec. 9, 1968, Pat. No. 3,540,091. This application Sept. 18, 1970, Ser. No. 73,346

Int. Cl. A44b *17/00*

U.S. Cl. 24—201 A **8 Claims**



A quick connect and disconnect coupling particularly adapted for connecting chains, wires, cables or other members together. The coupling generally comprises a male member and a female member with the female member including a slide member urged by a spring toward an end plate. The male member includes laterally extending flanges and the end plate has a slotted opening for receiving the male member. Locking the members together is accomplished by inserting the male member through the opening and against the slide member to move the slide member away from the end plate, rotating the male member and then releasing the male member to release the spring to thereby clamp the flanges of the male member between the slide member and the end plate.

3,675,500

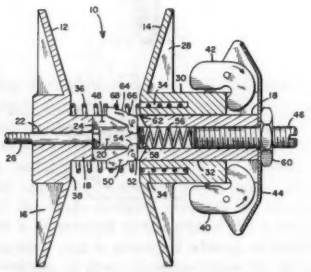
STEPWISE MOVABLE V-BELT DRIVE PULLEY

Robert V. Albertson, 2100 Shady Wood Road, Minneapolis, Minn.

Filed Nov. 4, 1970, Ser. No. 86,848

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 E **6 Claims**



A V-belt drive pulley transmission having a pulley with a fixed flange and an axially movable flange cooperating to form a variable diameter pulley for effecting a change in the "gear ratio" of the transmission. The displacement of the axially movable flange is a function of the rotational speed of the pulley. Further, a multi-step detent device comprising a spring biased pivotally mounted lever with detents therein is disposed between the fixed and the axially movable flange so that the displacement of the movable flange occurs in discrete steps to produce a "shifting" effect between low gear and high gear.

3,675,501

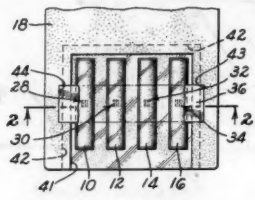
DISPOSABLE THERMOMETER

Hendrik De Kanter, Santa Ana, Calif., assignor to De Kanter-American Quality, Lake Arrowhead, Calif.

Filed March 19, 1971, Ser. No. 126,049

Int. Cl. G01k *11/08*

U.S. Cl. 73—358 **7 Claims**



A disposable thermometer comprising a series of separate sealed chambers. A temperature-sensitive material fills each chamber and each is adapted to change from a solid to a liquid state when exposed to heat above a different predetermined temperature. A quantity of magnetic metal particles is suspended in each temperature-sensitive material. The particles in each chamber initially are poled in a common direction along different, substantially parallel lines so as to rapidly repel each other and move from parallel alignment as the temperature-sensitive material in which they are suspended begins to change to a liquid state thereby providing an accurate and visual indication that the thermometer has been exposed to heat above the predetermined temperature associated with the temperature-sensitive material.

3,675,502

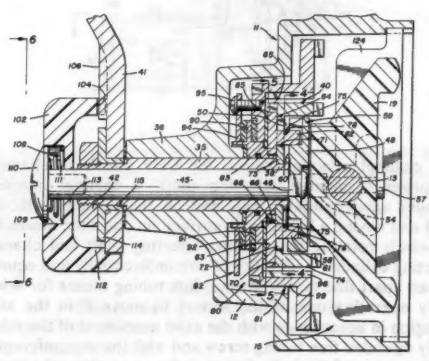
SELECTIVELY MANUAL OR AUTOMATIC SHIFT CONTROL FOR A TWO SPEED DRIVE IN A FISHING REEL

Thomas F. Sarah, Akron, Ohio, assignor to Shakespeare of Arkansas, Inc., Fayetteville, Ark.

Filed March 8, 1971, Ser. No. 121,696

Int. Cl. F16h *3/08*

U.S. Cl. 74—369 **15 Claims**



A variable drive for fishing reels, the drive providing high and low speed transmission ratios with either manual or automatic selection therebetween. Each speed ratio has a cor-

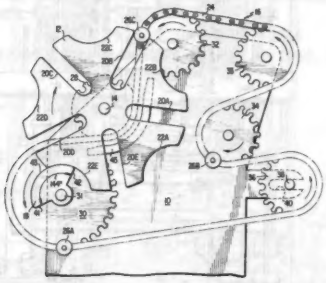
responding gear train operatively connected between a driving and a driven shaft. The two gear trains each have a driving gear carried on the driving shaft. The first and second driving gears mesh with corresponding first and second pinions carried on the driven shaft. The first pinion is connected to rotate only with said driven shaft, but the second pinion is mounted so as to be movable with respect to the driven shaft. A unidirectional clutch means operatively connects the two pinions so that the first pinion can overrun the second pinion but not vice versa. In one embodiment the first driving gear is rotatably carried on, and the second driving gear is affixed to, the driving shaft. In this embodiment a latch means selectively interconnects the first and second driving gears. When the gears are not interconnected by the latch means the ratio of the drive train incorporating the second driving gear is obtained, and when the two driving gears are interconnected the ratio of the drive train incorporating the first driving gear is obtained. In the other embodiment the first driving gear is an assembly having a collar-like hub portion rotatably carried on the driving shaft and a slip-clutch coupler, adjustable for the torque loading at which it slips, operatively connecting the hub portion to a gear portion. As in the first mentioned embodiment, a first latch means is operative between the second driving gear and the gear portion of the first driving gear assembly to control the manual selection of one or the other gear trains. In addition, a second latch means is operative between the second driving gear and the hub portion of the first driving gear assembly to incorporate the slip-clutch coupler within the drive train and thereby establish automatic selection of the transmission ratio in response to retrieval resistance. A cam means coordinately controls the latch means.

3,675,503

CHAIN DRIVEN INDEXING GENEVA MECHANISM

Pravin M. Upadhyay, Phillipsburg, N.J., assignor to Bell and Howell Company, Phillipsburg, N.J.

Filed Dec. 24, 1970, Ser. No. 101,303
Int. Cl. F16h *55/04, 27/04;* B23q *17/02*
U.S. Cl. 74—436 **17 Claims**



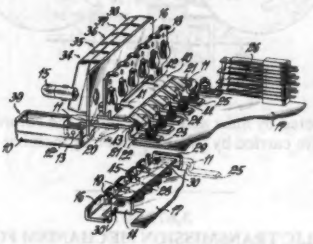
A mechanism wherein a chain drive rotates a geneva wheel is disclosed. A plurality of roller bearings are mounted on the chain drive and coact with driving slots formed in the geneva wheel. A cam that periodically registers with indexing indentations formed in the geneva wheel for locking the geneva wheel in predetermined positions is also disclosed. The chain drive is moved by an arrangement of sprockets, one of which rotates about the same axis as does the geneva wheel. The cam is mounted on another of these sprockets and rotates therewith. The position of one of the sprockets relative to the other sprockets is adjustable so as to control tension on the chain drive.

3,675,504

SEQUENTIAL KEY LOCKING AND RELEASING ARRANGEMENT

Eduard Schuh, Villingen, Germany, assignor to Kienzle Apparate GmbH, Villingen, Schwarzwald, Germany

Filed April 27, 1971, Ser. No. 137,860
Claims priority, application Germany, April 29, 1970, P 20 21 007.5
Int. Cl. G05g *1/00*
U.S. Cl. 74—483 PB **10 Claims**



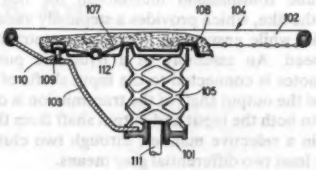
A taximeter is to be set to different operational conditions by corresponding keys. It is required that a certain starting condition, namely the condition "vacant" is first obtained by operation of a "vacant" key, before any other condition is selected, which is accomplished by locking all keys in a normal inoperative position, except the "vacant" key which, when actuated, unlocks all other keys for subsequent operation.

3,675,505

SAFETY STEERING WHEEL FOR POWER VEHICLES

Bodo Henning, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Jan. 22, 1970, Ser. No. 4,855
Claims priority, application Germany, March 12, 1969, P 19 12 528.1
Int. Cl. B62d *1/04*
U.S. Cl. 74—552 **2 Claims**



A safety steering wheel is provided with a deformable member constructed from a flat sheet of metal having rhombic shaped holes cut therein by rolling the latter to form a cylinder. The deformable member is disposed atop the hub of the wheel between the hub and the operator and it is capable of being deformed laterally as well as axially to absorb shocks.

3,675,506

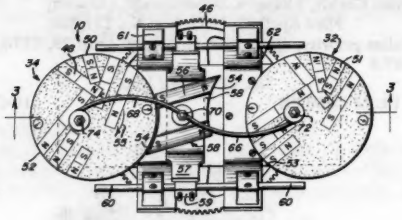
MAGNETIC ROTOR ASSEMBLY

Nick A. Leone, Lohrville, Rte. 1, Redgranite, Wis.

Continuation-in-part of Ser. No. 625,804, March 24, 1967, abandoned. This application July 14, 1970, Ser. No. 54,804
Int. Cl. G05g *1/00*
U.S. Cl. 74—572 **9 Claims**

A magnetic flywheel assembly in which a pair of drivingly interconnected rotors produce reciprocatory movement of a

magnetic member to mechanically and magnetically vary the torque exerted on each rotor during each rotational cycle. The reciprocatory member is slidably mounted between the rotors



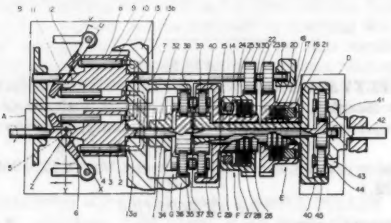
and connected by links and crankpins to the rotors. Magnetic elements are carried by the reciprocatory member and the rotors.

3,675,507

HYDRAULIC TRANSMISSION MECHANISM FOR HEAVY ROLLING STOCKS AND THE LIKE

Toshio Takekawa, Higashi-machi, Japan, assignor to Takekawa Tekko Kabushiki Kaisha, Mizuho-Ku, Nagoya, Japan

Filed June 22, 1970, Ser. No. 48,107
Claims priority, application Japan, Oct. 3, 1969, 44/79095
Int. Cl. F16h *47/04*
U.S. Cl. 74—687 **4 Claims**



A hydraulic transmission mechanism for heavy rolling stocks and the like, which provides a steplessly variable speed change ratio, while ensuring a very high output torque at a reduced speed. An assembly of a hydraulic pump and a hydraulic motor is connected to the input shafts of the transmission, and the output shaft of the transmission is operatively connected to both the input and output shaft from the hydraulic motor, in a selective manner, through two clutch assemblies and at least two differential gear means.

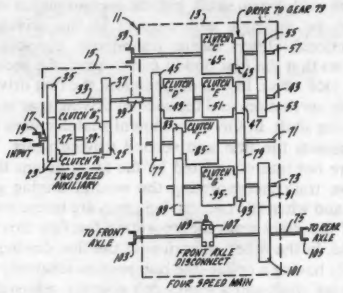
3,675,508

POWERSHIFT TRANSMISSION

Wallace J. Blank, Oshkosh, Wis., assignor to Oshkosh Truck Corporation, Oshkosh, Wis.

Filed Sept. 4, 1970, Ser. No. 69,588
Int. Cl. F16h *3/02, 3/08*
U.S. Cl. 74—74.5 **6 Claims**

An eight speed vehicle transmission including a four speed main gear box and a two speed splitter gear box located on the input side of the four speed gear box. The four speed main gear box is detachable from the two speed splitter gear box for use with lighter weight vehicles. The transmission includes oil actuated multiple disk, power shift clutches for actuating constant mesh spur gears. The clutches are operated in sequentially selected combinations by means of hydraulic fluid under pressure regulated by solenoid operated pilot valves. The solenoids are operated by relays through means of a selector switch. The range shift in the four speed main transmission is obtained by the use of two single clutch packs on the third shaft is used for the low range torque with the torque with the torque multiplication taken on the output side of this clutch. The high range torque is handled by the single clutch pack on



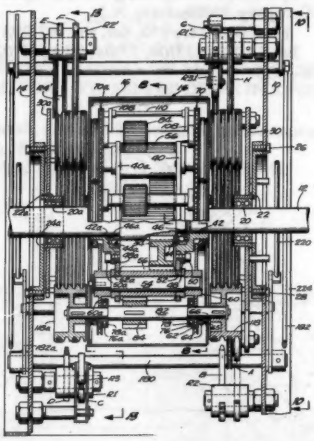
the fourth shaft. The output shaft of the main gear box has connections for rear and front axles. The output torque to the front axle is controlled by a torque limiter. Front axle drive disconnect means are also provided.

3,675,509

STEPLESSLY VARIABLE SPEED CHANGER

Louis Hubertus Widdershoven, Kerkrade, Netherlands, assignor to N. V. Nederlandsche Steenkolenmijnen "Willen-Sophia," , Spekholzerheide (Kerjrade-West), Netherlands

Filed Aug. 5, 1970, Ser. No. 61,182
Int. Cl. F16h *3/44*
U.S. Cl. 74—793 **17 Claims**



The invention is a steplessly variable or adjustable speed transmission for varying the ratio of speed of drive from one shaft to another. There is a planetary system which includes a sun gear on the output shaft. There are four planetary gears equally spaced around the shafts which are driven in circular orbits around the shafts. Carried also by the planetary system are additional gears providing driving relationships between the planetary gears and the sun gear. On the shafts of the planetary gears are grooved drive pulleys. Flexible lines or belts attached at their ends are wrapped around the pulleys. When the input shaft drives the pulleys in their orbits, the pulleys have traction with the belts so that the pulleys are driven

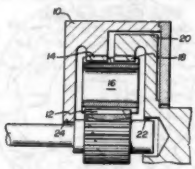
about their axes and through the planetary gear trains they drive the sun gear on the output shaft. The shafts of the planetary gears which also carry the grooved pulleys are carried by eccentric wheels or discs which are rotatable so that the radial distance of the grooved pulleys from the center line of the input and output shafts can be varied, for changing the speed ratio.

3,675,510

SPEED REDUCER

Anderson Duggar, Jr., 4350 Delemere Blvd., Royal Oak, Mich.

Filed Oct. 12, 1970, Ser. No. 79,817
Int. Cl. F16h *1/36*
U.S. Cl. 74—801 **5 Claims**



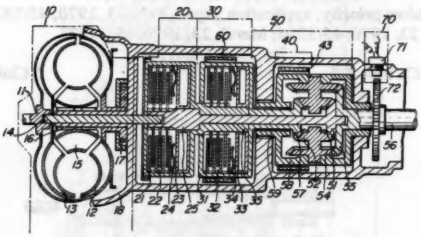
A speed reduction planetary transmission comprises an input sun gear, a series of planet gears meshing with the sun gear and a fixed ring gear, and an output ring gear. The number of teeth on the two ring gears differs by a very small number. The planets are free-floating and constructed to resiliently yield along their diametral dimension, to permit assembly in spite of an intentional interference fit between the gears. This eliminates backlash and distributes the load equally among all the planets. A modified embodiment utilizes a stepped planet gear, part of which meshes with an idler sun gear.

3,675,511

AUTOMATIC TRANSMISSION SYSTEM

Hisato Wakamatsu, Kariya-shi; Hisasi Kawai, Toyohashi-shi; Shin Ito, and Seitoku Kubo, both of Toyota-shi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan and Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Nov. 7, 1969, Ser. No. 874,934
Claims priority, application Japan, Feb. 28, 1969, 44/15742
Int. Cl. B60k *21/00*
U.S. Cl. 74—866 **6 Claims**



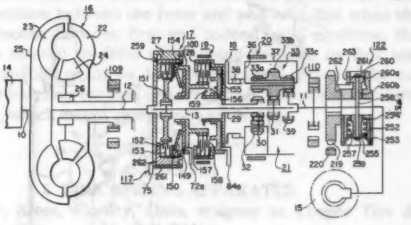
An automatic transmission system having means for electrically detecting the load on the engine and the speed of the vehicle, an electronic control device operative by receiving the detected signals to issue speed changing instructions best suited for the particular speed changing condition, and a hydraulic actuating circuit for operating the actuators in response to the speed changing instructions to thereby change the gear ratio.

3,675,512

CONTROL MECHANISM FOR AUTOMATIC SPEED CHANGE ASSEMBLY

Koichiro Hirozawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed May 25, 1970, Ser. No. 40,236
Claims priority, application Japan, May 23, 1969, 44/40489
Int. Cl. B60k *21/00*; F16h *47/00, 3/74*
U.S. Cl. 74—869 **4 Claims**



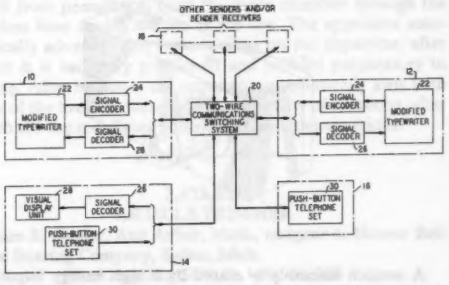
In an automatic speed change mechanism wherein the speed is changed by selectively engaging and disengaging a plurality of fluid operated friction devices, the line pressure is varied in accordance with the amount of torque being applied to a power transmission member, said power transmission member controlling a line pressure regulating valve for regulating said line pressure in proportion to the value of the transmitted torque applied to the power transmission member of the automatic speed change mechanism.

3,675,513

COMMUNICATIONS SYSTEM FOR ALPHANUMERIC INFORMATION EMPLOYING AUDIO TONE SIGNALLING

James Loton Flanagan, Warren; James Hughes Kronmeyer, Jersey City, and John Richard Nelson, Somerville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 24, 1970, Ser. No. 58,074
Int. Cl. H04m *11/00*
U.S. Cl. 179—84 VF **11 Claims**



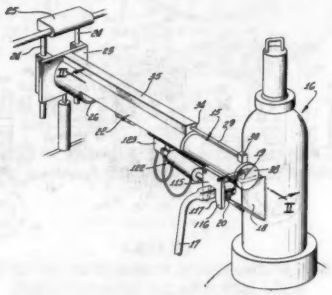
A communications system for exchanging alphanumeric information between remote stations, employing station apparatus (e.g., modified typewriters) capable of generating and responding to an audio tone code. The system is compatible with use of a push-button telephone instrument as an alternative sending station.

3,675,514

COMPOSITE POWER APPLYING MEANS

Raymond W. Walker, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.

Filed Dec. 17, 1970, Ser. No. 99,030
Int. Cl. B25b *17/00, 21/00*
U.S. Cl. 81—57.11 13 Claims



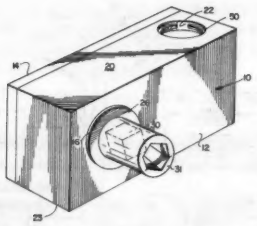
A composite power applying means to facilitate the making of a pipe connection in which a rotatable collar means is arranged to cause advancement or retraction of a pipe extending through the collar means which has external teeth engageable by cooperable means on said power means. The composite power means normally transmits rotative forces to the collar means, as by a worm gear, and is selectively operable to impart a reciprocal linearly directed force independently of the rotative force against the external teeth on the collar means for the purpose of effectively tightening or loosening a pipe connection under favorable or unfavorable working conditions, such as subsea well installations.

3,675,515

HIGH ENERGY IMPACT WRENCH ASSEMBLY

Louis L. Berg, Denham Springs, La., assignor to Creative Tool Company, Denham Springs, La.

Filed Sept. 30, 1970, Ser. No. 76,731
Int. Cl. B25b *13/06, 19/00*
U.S. Cl. 81—121 11 Claims



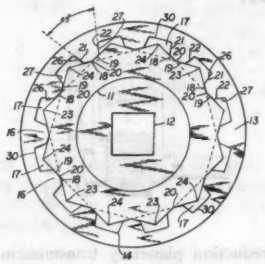
A wrench assembly operated by a high energy impact for use on large nuts or bolts. The assembly includes a heavy housing and a lever mounted for limited rotation within the housing. Gripping means for engaging and transmitting torque to the nuts or bolts project outwardly of the housing from the axis of rotation of the lever. The tang of the lever is located adjacent an opening in the top wall of the housing so that a power hammer can be positioned over the opening to impart blows through the opening to the tang and to transmit high turning forces to the gripping means.

3,675,516

WRENCH SPLINES, SPLINE DRIVES AND SIMILAR COUPLERS

Raymond G. Knudsen; James W. Price, and Gene E. Olson, all of Kenosha, Wis., assignors to Snap-On Tools Corporation, Kenosha, Wis.

Continuation-in-part of Ser. Nos. 321,955, Nov. 6, 1963, Pat. No. 3,273,430, and Ser. No. 589,153, Sept. 14, 1966, abandoned, and a continuation of Ser. No. 580,496, Sept. 19, 1966, Pat. No. 3,495,485. This application April 10, 1968, Ser. No. 742,987
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 10 Claims



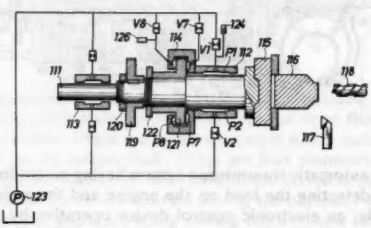
The invention involves multisided and specially shaped jaws or splines in wrench sockets or other rotary drivers or couplers configurated around an internal periphery to present uniformly spaced flat driving sides, jaws, or flanks for flat surface-to-surface engagement to impart torque turning loads to complemental flat multifaced externally polygonal fastener faces or driven coupler elements rather than to the corners thereof, and to accommodate hexagon, double hexagon, triple square, and complementally fluted or fluted or multi-splined nuts and the like. The internal and radially extending peripheral splines are configurated to present specially angulated engaging jaw sides or flanks with intervening and alternately spaced complemental grooves for flat surface engagement with the sides of either hexagon, double hexagon, triple square, or complementally splined nuts or the like without any corner engagement therewith.

3,675,517

ADAPTIVE AND NUMERICAL CONTROL MACHINE TOOL

Izumui Tadayoshi, Kawasaki, Japan, assignor to Tekko Kabushiki Kaisha Ikegai, Tokyo, Japan

Filed Feb. 19, 1971, Ser. No. 116,927
Claims priority, application Japan, Feb. 23, 1970, 45/1539; Feb. 23, 1970, 45/5396; March 23, 1970, 45/24323
Int. Cl. B23b *7/00*
U.S. Cl. 82—2 B 5 Claims



A numerically controlled machine tool with optimum adaptive control mechanism capable of properly altering the cutting section area and stopping of the cutting operation by

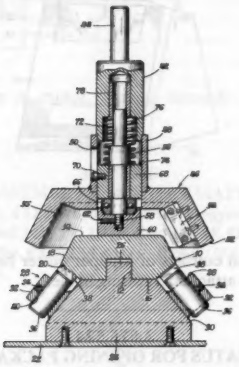
self-correction of the commands from pre-arranged reference program upon detection of a signal indicating a cutting force exceeding the reference limits and representing an abnormal pocket pressure and being derived as an electric output from a mechano-electric transducer during continuous checking of the pocket pressures of a hydrostatic bearing which support the cutting force being applied to the cutting tool throughout its cutting operation.

3,675,518

STOPPER RENEWAL DEVICE

Andrew G. Germain, Medina, and William G. Dressel, Elk Grove Village, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Aug. 10, 1970, Ser. No. 62,361
Int. Cl. B23b *3/06*
U.S. Cl. 82—1 B **5 Claims**



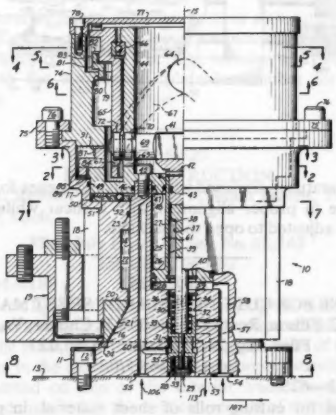
A base supports the underside of the stopper, and the cutter is rotatably mounted on a shaft having a head to clamp the stopper against the base during the cutting operation.

3,675,519

TWO POSITION TOOL HOLDER

Stuart McCullough, Covina, Calif., assignor to Textron Inc., Covina, Calif.

Filed Aug. 13, 1970, Ser. No. 63,545
Int. Cl. B23b *29/32*
U.S. Cl. 82—36 A **10 Claims**



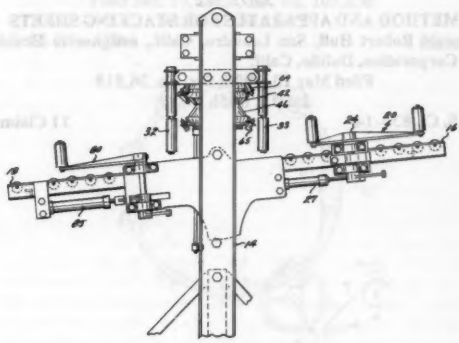
A tool holder according to the present disclosure includes a spindle adapted to be mounted to a machine. Housing means is journaled by the spindle for movement between first and second angular positions. Mount means carried by the housing means supports a work tool, and drive means is provided for rotating the housing between the first and second angular positions. Clamp means is provided for preventing relative rotation of the housing and the spindle when the housing means is in either its first or second angular position. Preferably, the drive means includes a hydraulic actuator which may comprise a rotor attached to the housing and a piston disposed for reciprocal movement along the axis of the tool holder. Cam and cam follower means is provided for relative operation between the rotor and piston so that when the piston moves between first and second axial positions, the rotor is rotated to drive the housing between its first and second angular positions. Indexing means is provided for accurately indexing the first and second angular positions of the housing, which means comprises a set of stops.

3,675,520

TIRE AWLING APPARATUS

Karl W. Klose, Findlay, Ohio, assignor to Cooper Tire & Rubber Company, Findlay, Ohio

Filed Jan. 28, 1970, Ser. No. 6,455
Int. Cl. B26f *1/34*
U.S. Cl. 83—2 **3 Claims**



An apparatus for automatically awling tires to permit easy escape of trapped gases which may have been enclosed or developed interiorly of the casing during manufacture or result from permeation from the inner chamber through the tubeless liner during the life of the tire. The apparatus automatically advances and centers a tire on the apparatus, after which it is vertically positioned and inflated preparatory to awling. After inflation, the apparatus automatically awls both sides of the tire simultaneously in a plurality of locations, after which the tire is deflated and ejected from the apparatus.

3,675,521

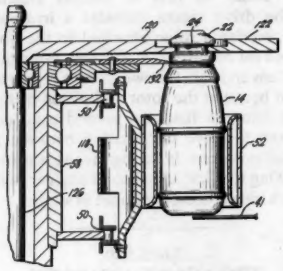
ARTICLE TRIMMER

William E. Ziegler, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed May 28, 1970, Ser. No. 41,272
Int. Cl. B23b *3/04, 5/14*
U.S. Cl. 82—101 **18 Claims**

Apparatus for trimming the flash from the necks of molded hollow plastic articles. The flash on the upper end of each of the articles is formed to define a dome having an annular groove coaxial with the neck of the article. Stationary guide means and movable guide means penetrate the grooves in the domes so as to transport the articles while simultaneously rotating them about their axes. A cutting tool is provided for

severing the flash from the rotating article. Carrier means are provided for translating the articles in upright positions from a



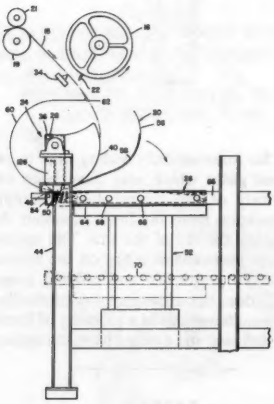
loading station to the trimming station and from the trimming station of an unloading station.

3,675,522

METHOD AND APPARATUS FOR STACKING SHEETS

Harold Robert Hull, San Leandro, Calif., assignor to Hexcel Corporation, Dublin, Calif.

Filed May 13, 1970, Ser. No. 36,818
Int. Cl. B65h *29/32*
U.S. Cl. 83—14 **11 Claims**



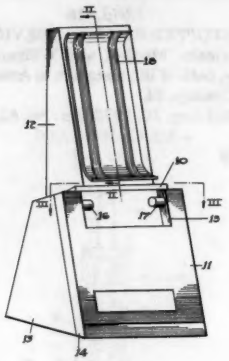
A method for stacking and aligning sheets, as during the manufacture of unexpanded honeycomb blocks, in which a long strip of the sheet material is moved towards and past a shear and grasped so that the lateral position of the sheet material strip determines the lateral position of the grasped sheet material portion. Thereafter a section of the sheet material including the grasped portion is severed and the severed section is moved from the shear to above the stack in alignment with the sheets previously deposited on the stack and the sheet is released for placement on the stack.

3,675,523

PAPER CUTTER

Milton Alden, Needham, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Filed June 3, 1970, Ser. No. 42,947
Int. Cl. B26d *5/08*
U.S. Cl. 83—167 **9 Claims**



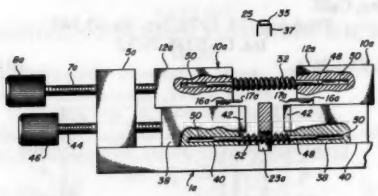
The invention consists of a paper cutter having an endless belt to which is attached a cutting blade.

3,675,524

APPARATUS FOR OPENING PACKAGES OF LAMINATED CONSTRUCTION

Larry R. Coleman, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed Aug. 27, 1970, Ser. No. 67,343
Int. Cl. B26d *7/02*
U.S. Cl. 83—459 **7 Claims**



An apparatus is disclosed which provides means for holding a package in proper alignment with a shear while the apparatus is adjusted to open the package.

3,675,525

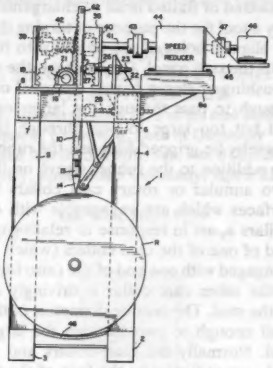
MACHINE FOR CUTTING ROLLS OF SHEET MATERIAL

William C. Ellison, Route 2, Box 1006-B, Chester, Va.

Filed Aug. 21, 1970, Ser. No. 66,027
Int. Cl. B26d *5/08*
U.S. Cl. 83—629 **8 Claims**

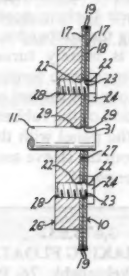
Machine for cutting rolls of sheet material, in particular paper, prior to reworking. A heavy knife with horizontally-disposed cutting edge is forced downwardly in guided translation to make a radial cut in the roll. The knife is carried by a

pair of vertical racks which are synchronously forced



downwardly by a motor, acting through speed-reducing means.

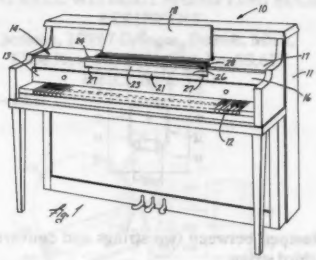
3,675,526
SAW ASSEMBLY FOR SHEET MATERIAL
William R. Bush, 431 Portercrest Drive, Graysville, Ala.
Filed July 27, 1970, Ser. No. 58,562
Int. Cl. B23d *45/10*; B26d *1/14*
U.S. Cl. 83—676 **3 Claims**



Saw assembly having thin disc member with cutting teeth on periphery and back-up disc secured to side. Cutting teeth project outwardly of back-up disc. Disc member and back-up disc secured to flat surface of rotatable member for rotation therewith.

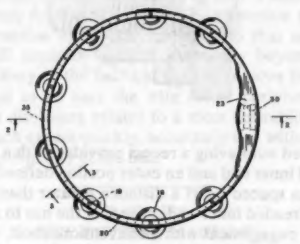
3,675,527
PIANO CONSTRUCTION
George H. Reeder, Jr., Rte. No. 3, South Haven, Van Buren County, Mich.
Filed July 17, 1970, Ser. No. 55,742
Int. Cl. G10c *3/02*
U.S. Cl. 84—180 **6 Claims**

A fold-out light structure for illuminating the music rack of a piano and having an L-shaped support structure disposed in front of the music rack and comprising a portion of the piano shelf when in the closed position. The support structure has a light mounted on one of the interior walls thereof and is pivotably connected to the vertical portion of the shelf which extends upwardly from the rear of the keyboard, whereby the support structure is pivotably movable outwardly away from the shelf to permit the light to illuminate the music rack located adjacent the rear of the shelf. A switch is preferably disposed for energizing the light, which switch may be auto-



matically actuated when the support is moved to the open position.

3,675,528
TAMBOURINE
Edmund J. Brick, Bergenfield, N.J., assignor to Thomas J. Brick, Bergenfield; Theresa A. Roberts, Saddle Brook, N.J. and William E. Young, Stamford, Conn., part interest to each
Filed Jan. 19, 1971, Ser. No. 107,630
Int. Cl. G10d *13/02*
U.S. Cl. 84—418 **6 Claims**

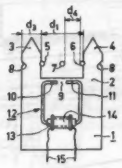


A tambourine having the usual arrangement of pairs of jingles, has a handgrip molded into one inner sidewall portion of the frame. Through the sidewall of the tambourine at the grip portion is formed an aperture in which is mounted a bearing or pair of bearings sized so as to enable a performer to position the tambourine on a finger such as an index finger of the performer and to spin or rotate the tambourine around the bearings. A dimple recess formed on the outer side of the frame of the tambourine and opposite the aperture provides an additional support for the tambourine during substantially horizontal rotation. The tambourine shown is preferably a two-piece molded frame of plastic which, as it is assembled, is retained by aligning pins as well as other pins upon which are mounted the jingles. Recesses are formed in the aperture and sized to retain the outer races of the bearings when said bearings are mounted in the aperture of the assembled frame.

3,675,529
ELECTROMECHANICAL TRANSDUCER FOR TUNING INDIVIDUAL STRINGS OF A MUSICAL INSTRUMENT
Albertus Cornelis Van Der Woerd, Delft, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1970, Ser. No. 89,389
Claims priority, application Netherlands, Nov. 27, 1969, 6917828
Int. Cl. G10g *7/02*
U.S. Cl. 84—455 **5 Claims**

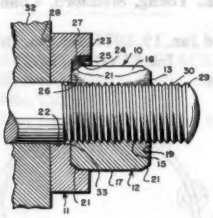
An electromechanical transducer for converting the move-

ments of a vibrating string into electric vibrations for use in tuning the string and provided with a forked member which



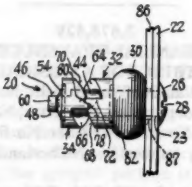
may be clamped between two strings and converts the vibrations of a third string.

3,675,530
QUICK RELEASE NUT
Michel N. Victor, 176 Crestview Drive, Pittsburgh, Pa.
Filed March 17, 1970, Ser. No. 20,362
Int. Cl. F16b *37/08*
U.S. Cl. 85—33 **2 Claims**



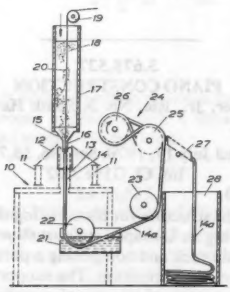
A U-shaped nut having a recess provided with a semi-circular threaded inner end and an outer portion defined by parallel wall surfaces spaced apart a distance greater than the diameter of the threaded inner end, to enable the nut to move transversely into engagement with a conventional bolt, at any point along the length of the bolt, for meshing the nut thread with the bolt thread, and a washer slidably fitting on the bolt and having a depression in one side thereof in which the nut is received and confined against lateral movement relative to the bolt. Said depression of the washer and the nut have complementary surfaces disposed in abutting engagement when the nut is fully seated in the depression to prevent lateral sliding or rocking movement of the nut relative to the bolt.

3,675,531
RELEASABLE PANEL FASTENER
Kenneth G. Lehman, Easton, Conn., assignor to Norco, Inc., Ridgefield, Conn.
Filed May 21, 1970, Ser. No. 39,480
Int. Cl. F16b *13/06*
U.S. Cl. 85—70 **9 Claims**



A releasable stud-type fastener adapted to be turnable in and extend through an opening of a panel and project therefrom at right angles so as to be receivable in an aligned opening of another panel which has a larger hole or opening. The fastener comprises a smooth-shanked headed stud having at one end a slotted or flatted head or enlargement adapted to be engaged by a tool for the purpose of turning the stud after it occupies the aligned holes of the panels with its head in engagement with the one panel. On its shank the stud carries a soft rubber bushing or sleeve having a normal outside diameter small enough to pass through the larger opening of the second panel but too large to pass through the first panel which can thereby be gripped between the rubber sleeve and stud head. In addition to the rubber sleeve on the stud shank there are two annular or rotary cam collars having facing camming surfaces which are engageable with each other to move the collars apart in response to relative rotary motion. The back end of one of the cam collars (which is turnable on the stud) is engaged with one end of the (also turnable) rubber sleeve, and the other cam collar is drivingly affixed to the small end of the stud. The outside diameters of the cam collars are also small enough to pass through the large hole of the second panel. Normally the cam collars and rubber sleeve hold the stud perpendicular to the face of the first panel. To secure the two panels together, that with the large hole is slipped over the cam collars and the rubber bushing and brought against the panel on which the fastener is mounted. The fastener stud is then turned by an appropriate tool such as a screwdriver or wrench. This drives or turns the affixed cam collar, and causes relative turning movement between the collars whereby they separate in such a manner that the rubber bushing is axially compressed and enlarged radially. The radial enlargement makes its outside diameter or circumference larger than the large hole through which it was passed (in the second mentioned panel), whereby the latter will now be securely gripped and held tightly against the first panel. Small interlocking shoulders on the cam surfaces of the cam collars maintain the same in their locking position separated from each other and expanding the rubber bushing. To release the panels, the stud head is merely turned in the opposite direction, forcing opposite relative turning of the cams to occur, which enable them to move toward each other, this being accompanied by restoration of the rubber sleeve to its normal diametric size whereby the panel with the large opening can now be readily slipped from the sleeve and cam collars so as to be released from the other panel.

3,675,532
PROCESS FOR MAKING FLOATABLE CARDS
Jan Hendrik Platou, Birkelundsbk. 76, Paradis, Near Bergen, Norway
Division of Ser. No. 712,445, March 12, 1968, Pat. No. 3,578,763. This application June 19, 1970, Ser. No. 59,798
Int. Cl. D04c *1/12*
U.S. Cl. 87—1 **6 Claims**



A flexible floatable cord for use in fishing nets, trawls and the like, which comprises a braided sleeve, a core of continuous filament threads incorporated therein and particles of an expanded plastic material disposed between said sleeve and

said core, said particles being only attached to one another and to the sleeve and the core and forming a continuous cord in which the core is embedded. Further a process and an apparatus for producing said flexible floatable cord.

3,675,533

FASTENING MEANS SEVERABLE BY IGNITION OF AN EXPLOSIVE CHARGE

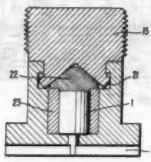
Heinz Gawlick, Boenerstrasse 32, Furth, and Hellmut Bendler, Virchowstrasse 6, Nurnberg, both of Germany

Filed April 23, 1969, Ser. No. 818,520

Claims priority, application Germany, April 22, 1968, P 17 71 211.7

Int. Cl. F16b *19/04*

U.S. Cl. 89—1 B **6 Claims**



A threaded fastener having means for effecting a severing thereof at a predetermined location upon the electrical ignition of an explosive charge, wherein an explosive cartridge is disposed within the body of the threaded fastener to cause a shearing off of the fastener at the desired location without destroying the external threaded portion of the fastener.

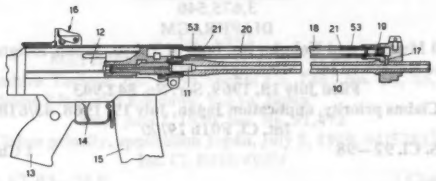
3,675,534

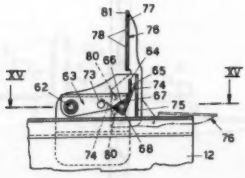
AUTOMATIC RIFLE

Pier Carlo Beretta, Gardone Val Trompia, Italy, assignor to Fabbrica D'Armi P. Beretta S.p.A., Gardone Val Trompia (Brescia), Italy

Filed April 21, 1970, Ser. No. 30,492

Claims priority, application Italy, April 29, 1969, 16212 A/69





An automatic rifle is disclosed, of the type which exploits the pressure of the explosion gases for cocking the bolt, the improvement consisting in a simplified arrangement for the guiding tube in which the gas-actuated plunger or piston is slidably housed. A limited number of component parts ensures a longer service life for the rifle and the assembling and disassembling operations are considerably facilitated. An improved sighting arrangement is also disclosed.

3,675,535

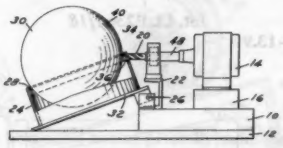
APPARATUS FOR REMOVING EXCESS OF MATERIAL PROJECTING FROM THE TRUE PERIPHERY OF A BOWLING BALL WITHOUT MODIFYING SUCH TRUE PERIPHERY

Chester W. Jerome, 19997 Orleans, Detroit, Mich.

Filed Nov. 12, 1970, Ser. No. 88,677

Int. Cl. B23c *3/04*

U.S. Cl. 90—11 R **2 Claims**



An improved method of and improved apparatus for removing all undesirable material projecting outwardly beyond the true round periphery of a bowling ball. There are many bowlers who desire to have the finger openings changed after they have made use of a ball for a period of time. This change in the position, size and/or relationship of finger openings is generally accomplished by plugging up one or more of the openings in the ball and then relocating or reboring openings to meet the bowler's desire. In carrying out this process it is frequently done by filling up the original finger opening with a plug driven thereinto or by filling the same with material allowed to harden therein. In order to be sure of filling the opening completely for the modification or relocation thereof, it is common practice to overfill the same so that an excess of material will normally project outwardly beyond the true round periphery of the ball and then to remove the excess of said material to be sure the true round periphery is maintained. This disclosure relates to a most desirable method of removing such excess quickly, accurately and without disturbing the true periphery of the ball.

3,675,536

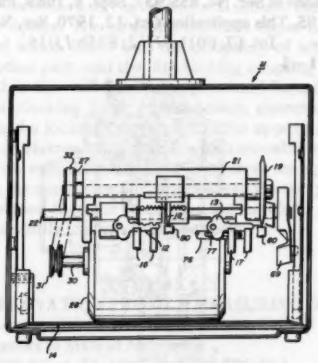
KEY CUTTING MACHINE

Philip C. Hungerford, Jr., Cleveland; John L. Gereby, Wickliffe, and Robert H. Richens, Bedford Heights, all of Ohio, assignors to Cole National Corporation

Filed Nov. 27, 1970, Ser. No. 93,145

Int. Cl. B23c *1/16*

U.S. Cl. 90—13.05 **23 Claims**



A key cutting machine as disclosed which is semi-automatic operation in that the master key to be copied and a blank key are mounted in vises, a door is closed, the machine is turned on and it automatically cuts a key blank in accordance with

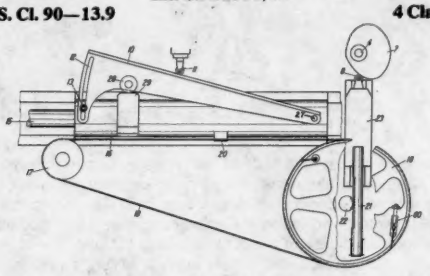
the master key, brushes the key to remove any burr and then the machine shuts itself off. The door may then be opened and the keys removed from the vises.

3,675,537

CONTROL ARRANGEMENTS FOR AN AUTOMATIC MACHINE TOOL

Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany

Filed Oct. 8, 1970, Ser. No. 79,159
Claims priority, application Great Britain, Oct. 23, 1969, 52038/69
Int. Cl. B23c 1/18
U.S. Cl. 90—13.9 **4 Claims**



This invention relates to a control arrangement for an automatic tool having a linear profiled master cam which is mounted on a movable carrier with its linear profile inclined at a predetermined angle to the direction of displacement of the carrier. The linear profile is sensed by a main follower which is coupled to control means for controlling a milling tool operating on a rotating workpiece. A composite auxiliary cam is rotated with the workpiece and an auxiliary follower cooperating with the composite auxiliary cam is coupled to the carrier to control the displacement thereof, whereby the control of the milling tool is so dependent on the shape of the composite auxiliary cam as to cause the tool to form the workpiece with a cam profile corresponding to that of the composite cam.

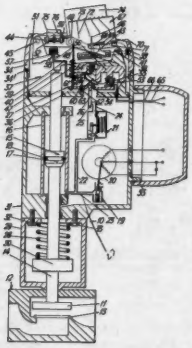
Preferably, the predetermined angle may be adjusted to vary the size of the cam profile formed on the workpiece compared with that of the composite auxiliary cam.

3,675,538

HYDRAULIC CONTROL SYSTEM

William Fredrick Keller, Covina, and Frank Francis Domyan, North Hollywood, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 855,937, Sept. 8, 1969, Pat. No. 3,620,185. This application Oct. 12, 1970, Ser. No. 80,113
Int. Cl. F01b 31/12; F15b 13/16
U.S. Cl. 91—1 **3 Claims**



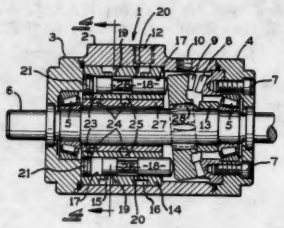
An hydraulic system having calibration, bandwidth, and dash pot controls with indicators for each, and a dash pot adjustment.

3,675,539

HYDRAULIC MOTOR

Theodore S. Zajac, and Hal E. George, both of Rocky River, Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Aug. 7, 1970, Ser. No. 61,968
Int. Cl. F04b 13/04
U.S. Cl. 91—477 **14 Claims**



An axial piston hydraulic motor of the type wherein the motor drive shaft and cylinder block are coaxial characterized in that the pistons react against a nutating gear which progressively meshes with a gear having a different number of teeth, one gear being non-rotatable in the motor housing and the other gear being non-rotatable on the drive shaft whereby the drive shaft and housing are relatively rotated during each nutation of the nutating gear through an angle depending on the difference in the number of teeth of said gears. The motor herein is further characterized in that each piston as it reciprocates in its bore constitutes a three-way valve to alternately communicate an angularly displaced piston bore with the pressure inlet and return ports in the housing via passages in the cylinder block communicating with said ports and with such angularly displaced piston bore.

3,675,540

DIAPHRAGM

Eiji Murata, and Kohuku Ito, both of Tokyo, Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 18, 1969, Ser. No. 842,943
Claims priority, application Japan, July 19, 1968, 43/61899
Int. Cl. F01b 19/00
U.S. Cl. 92—98 **1 Claim**

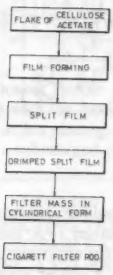
A diaphragm unit having a diaphragm support plate that is subject to corrosion and a corrosive resistant metal sheet that covers an aperture formed by an inner wall of the diaphragm support plate to protect it from corrosion. The sheet is seam welded to the support plate while the aforementioned inner wall, the space between the inner wall and the outermost wall of the support plate and the edge of the outermost wall are held in a tightly adhered to manner with one another.

3,675,541

PROCESS OF MAKING A TOBACCO SMOKE FILTER FROM A SPLIT FILM OF CELLULOSE ACETATE

Soichi Tokitomo, Tokyo; Masakazu Honda; Fumio Nakayama, both of Toyama, and Keisiro Ueno, Otake, all of Japan, assignors to Mitsubishi Rayon Company Limited and Mitsubishi Acetate Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 687,351, Dec. 1, 1967, abandoned. This application June 2, 1970, Ser. No. 42,625
Claims priority, application Japan, Dec. 13, 1966, 41/81636
Int. Cl. B29d *7/24*; B32b *31/08*; D04h *3/16*
U.S. Cl. 93—1 C 7 Claims



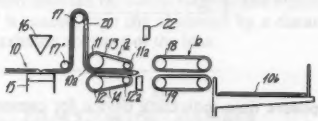
A cellulose acetate film is subjected to stretch operations which are carried out under conditions such that highly oriented molecular chains are created therein and then to splitting whereby a netlike configuration composed of numerous stem fibers and branch fibers linking adjacent stem fibers is obtained. A tobacco smoke filter is formed from the split acetate film after additional treatments including crimping.

3,675,542

METHOD OF MANUFACTURING BAGS

Yasuhiro Torigoe, c/o Taiyo Shokai Co. Ltd., No. 16, 15, 4 chome Kitakoiwa Edogawa, Tokyo, Japan

Filed July 1, 1970, Ser. No. 51,472
Claims priority, application Japan, July 5, 1969, 44/52813
Int. Cl. B31b *49/04*
U.S. Cl. 93—35 R 1 Claim



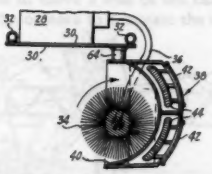
The present invention provides a method of manufacturing bags from a strip-like bag material of a thermoplastic synthetic resin and is characterized by having the heat-sealing of the bag material and the severing of the heat-sealed portions performed in two separate steps to thereby secure the smooth transfer of the bag material so that the bag manufacturing efficiency may be enhanced.

3,675,543

AUTOMATIC RAKER

John M. Neal, 512 Yolo Avenue, Oroville, Calif.

Filed Jan. 18, 1971, Ser. No. 107,044
Int. Cl. E01c *23/00*
U.S. Cl. 94—39 3 Claims



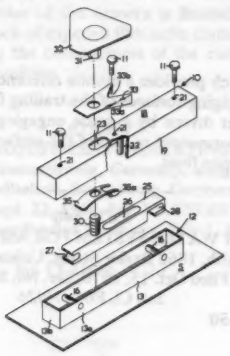
A rotatable brush and heater pivotally mounted beneath a frame for movement over the ground.

3,675,544

QUICK COUPLER ASSEMBLY

Francesco Zochil, 10 Cortina Crescent, Hamilton, Ontario, Canada

Filed Dec. 22, 1970, Ser. No. 100,576
Int. Cl. F01c *19/22*
U.S. Cl. 94—45 A 5 Claims



A coupling device primarily for use in attaching trowelling blades to the arms of a cement finishing machine. The coupling allows for ready removal and attachment of the blades, allows for reversal of their position through 180°, and in particular provides a dirt excluding seal around the movable parts of the device. The coupling includes upper and lower parts, one of which has a wall the periphery of which seals against the other part, and the interlocking coupling parts are disposed within this wall thus being protected from ingress of dirt. The interlocking parts include catch elements on the lower part, and a locking bar slidable in the upper part to engage the catch elements and which is also movable by handle operated screw means towards and away from the upper part so that when the catch elements are engaged the two parts can be tightly fastened together by turning the handle to draw the locking bar inwardly towards the upper part.

3,675,545

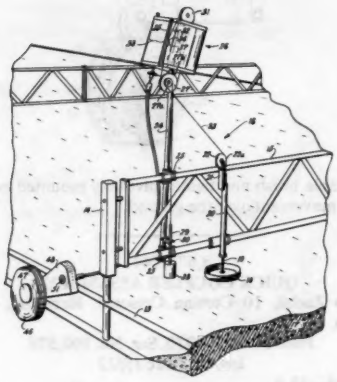
SURFACE ELEVATION PROFILE MEASURING DEVICE

John E. Anderson, and Homer Dayle Sinnett, both of Lincoln, Nebr., assignors to State of Nebraska

Filed Nov. 26, 1969, Ser. No. 880,162
Int. Cl. E01c *23/01*; G01b *5/28*
U.S. Cl. 94—46 8 Claims

For use in combination with the slip form paver, a device for detecting, measuring and recording surface irregularities of

freshly formed pavement still in a plastic condition. A counterweighted pan float lightly engages the pavement surface and responds to irregularities by reciprocal movement as the paver advances over the grade surface. The pan is suspended from an interconnecting truss structure of the trailing forms of



the paver which provides a mobile reference plane parallel to the grade engaging surfaces of the trailing forms and paver. A chart recorder driven by a grade engaging wheel provides a continuous, permanent record of the surface irregularities detected by the pan float.

3,675,546

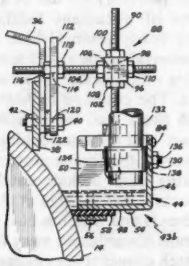
FREE FLOW WATER SYSTEM FOR ASPHALT ROLLERS

Arthur A. Smith, 1863 Baylor Street, Union City, Calif.

Filed Oct. 15, 1970, Ser. No. 80,929

Int. Cl. E01c *19/26*

U.S. Cl. 94—50 9 Claims



An open-sided trough is mounted for vertical and horizontal adjustment with respect to each roller of a conventional asphalt paving machine, a segment of the roller closing the open side of the trough. A rubber blade forms part of the bottom of the trough. The vertical adjustment enables the operator to keep the trough level to retain water therein while operating the machine on a grade; the horizontal adjustment permits compensation for blade wear from rubbing contact with the roller, as well as applying the proper amount of blade pressure to the roller.

3,675,547

PHOTOGRAPHING SYSTEM FOR USE WITH A FLASH DEVICE

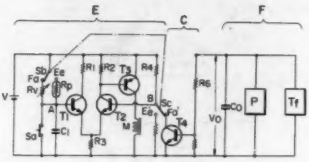
Takashi Uchiyama; Tadashi Ito, both of Kanagawa-ken, and Mutsuhide Matsuda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 16, 1970, Ser. No. 46,732

Claims priority, application Japan, June 23, 1969, 44/49790; Nov. 20, 1969, 44/93176

Int. Cl. G01j *1/46*

U.S. Cl. 95—10 CT 21 Claims



A photographing system for use with a flash device comprising a flash-auto mechanism (FA mechanism) including an electronic timer circuit for exposure control a power capacitor for storing charges, a power supply circuit for charging said power capacitor, a control circuit for detecting said charges stored in said power capacitor and for adjusting said flash-auto mechanism in accordance with said charge across said power capacitor, and a discharge circuit connected across said capacitor and including a discharge lamp for triggering said discharge lamp to operate said system.

3,675,548

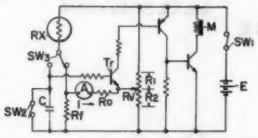
EXPOSURE TIME INDICATING DEVICE FOR PHOTOGRAPHIC CAMERAS EQUIPPED WITH AN ELECTRONICALLY CONTROLLED SHUTTER

Tomio Kikuchi, Tokorozawa-shi, and Kiyoyuki Arai, Gyodashi, both of Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Nov. 12, 1969, Ser. No. 875,761

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT 7 Claims



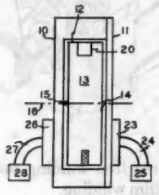
An exposure time indicating device for cameras equipped with an electronically controlled shutter, comprising a meter adapted to be connected to the output terminals of a bridge network formed with four arms, viz. a light-sensitive element, a resistor and bias resistors, said bridge network being arranged so that said resistor is switched over to a capacitor and that said meter is switched over to a switching means such as a transistor by a changeover switch, respectively, to form an automatic exposure control circuit. Said exposure time indicating device will indicate the exposure time controlled by said automatic exposure control circuit through a pointer caused to swing from one position to another by the current flowing through said bridge network.

3,675,549

VERTICAL REFERENCE PENDULUM

Robert S. Adair, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 4, 1971, Ser. No. 112,538
Int. Cl. G03b 17/24
U.S. Cl. 95—1.1 9 Claims



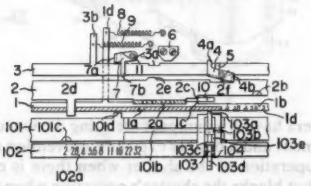
The invention disclosed herein provides a pendulum mounted in a housing with an optical read-out system to operate in conjunction with a photographic device for recording the pitch and roll of a submerged camera.

3,675,550

DEVICE FOR CORRECTING THE OPEN APERTURE RATIO OF INTERCHANGEABLE LENSES IN A CAMERA SELF-CONTAINING A TTL EXPOSURE METER

Sunao Ishizaka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed April 9, 1970, Ser. No. 26,986
Claims priority, application Japan, April 18, 1969, 44/29642; April 18, 1969, 44/29641
Int. Cl. G03b 17/14, 9/07
U.S. Cl. 95—10 C 9 Claims



The lens must be mounted in a position corresponding to the largest aperture of the lens. An exposure control member, which is associated with the meter, is rotatably mounted on the camera body. The member is connected to the f-stop adjusting ring. The lens barrel has an abutment which, at its extended position, prevents incorrect mounting of the lens. The interconnection between the f-stop ring and the exposure control member is spaced from the abutment by a distance relative to the maximum aperture of the lens.

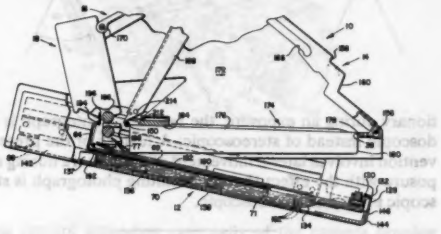
3,675,551

FILM STORAGE CHAMBER

Edwin H. Land, Cambridge, and Irving Erlichman, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 11, 1970, Ser. No. 36,251
Int. Cl. G03b 19/02, 17/52
U.S. Cl. 95—11 R 28 Claims

A camera having a variable volume film storage chamber which is generated from within the confines of the camera by moving sections of the camera into a position wherein film units can be sequentially exposed, processed and individually viewed between exposures. The storage chamber is defined in part by a wall of the camera which is adapted to be moved away from the remainder of the camera. In the case of a folding type camera, one end of an erecting link functions as a cam to engage a cam follower on the movable wall to move the wall away from the remainder of the camera as the erecting link guides sections of the camera into an extended, operative position. In the case of a non-folding type of camera, a manually operated button is actuated to move a plurality of cams in a direction to move a wall of the camera away from the remainder of the camera to generate the storage chamber



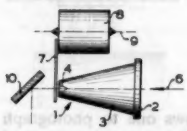
and to make the camera fully operative. In both types of cameras, springs are connected between the movable wall and the remainder of the camera for moving the wall toward the remainder of the camera when the user folds the folding type camera or when he again actuates the aforementioned button on the non-folding type of camera. Movement of the wall toward the remainder of the camera is limited only by the thickness of the stack of exposed film units contained therein, thereby minimizing the compactness of the camera when in the non-operative position.

3,675,552

CAMERA WITH ADJUSTMENT-INDICATING LOCATION

Friedrich Papke, Braunschweig, Germany, assignor to Voigtlander Aktiengesellschaft, Braunsweig, Germany

Filed Sept. 22, 1969, Ser. No. 859,681
Claims priority, application Germany, July 1, 1969, P 19 33 260.6
Int. Cl. G03b 17/20
U.S. Cl. 95—11 V 3 Claims



A camera which is provided in the region of its viewfinder with a location where an indication of the adjustment of the camera can be read. For this purpose the camera is provided with a light-conducting body having a light-receiving surface to receive light from the exterior of the camera and a light-discharging surface from which light moves beyond this body to be seen by the operator. This light-discharging surface of the light-conducting body has a configuration which enables it to form in itself the structure for indicating the adjustment of the camera.

3,675,553

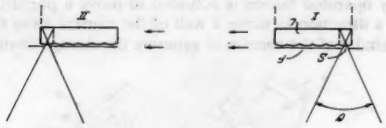
METHODS OF INTEGRAL PHOTOGRAPHY

Leslie Peter Dudley, Los Angeles, Calif., assignor to Dudley Optical Laboratories, Inc., Beverly Hills, Calif.

Division of Ser. No. 747,996, July 26, 1968, Pat. No. 3,613,539. This application Oct. 12, 1970, Ser. No. 79,776
Int. Cl. G03b 35/04
U.S. Cl. 95—18 P 6 Claims

Photographs of the integral type, exhibiting the effect of parallax about both horizontal and vertical axes, are recorded on a spherically lenticulated film, or on a spherically lenticu-

lated screen-film combination, by means of a modified type of camera. Light is admitted to the film by way of a rectangular aperture in the front of the camera instead of through the usual photographic objective lens. If the camera is held stationary during an exposure, the resulting photograph is pseudoscopic instead of stereoscopic. A feature of the present invention involves lateral movement of the camera during an exposure with the effect that the resulting photograph is stereoscopic instead of pseudoscopic.



3,675,554

DEVICE FOR RECORDING AND REPRODUCING STEROSCOPIC IMAGES

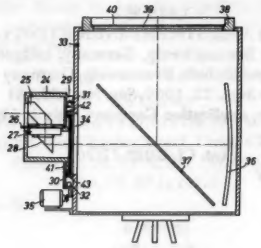
Maurice Bonnet, Puteaux, France, assignor to Etablissement Public: Agence Nationale De Valorisation De La Recherche Anvar

Filed March 8, 1971, Ser. No. 121,766

Claims priority, application France, March 13, 1970, 7009031

Int. Cl. G03b *35/08*

U.S. Cl. 95—18 P **8 Claims**



The device allows one to photograph an object and to reproduce it by giving to the observer the feeling of seeing this object true-to-life and full-size. The device consists of an optical unit having at least an objective which forms, in each position taken by the unit, the image of an object being on an optical system directing the rays to a frame holding a cylindrical lenticular element film coated with a sensitive layer recording successively all composite images thus transmitted and which, during reproduction, will allow an observer to view a relief image of the object under the same conditions as a direct and actual view of this object. Such a device can be used for relief photography.

3,675,555

FILM LOCKING DEVICE IN CAMERA

Masao Mori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

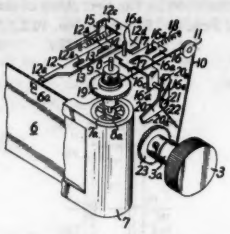
Filed April 24, 1970, Ser. No. 31,543

Claims priority, application Japan, May 9, 1969, 44/42796

Int. Cl. G03b *1/04, 1/62*

U.S. Cl. 95—31 FM **7 Claims**

A device comprises a film winding shaft, a winding knob disposed separately from the winding shaft, a cord or chain operatively connecting the shaft to the knob and a member for sensing the perforation of a film. In operative relationship with the perforation sensing member, locking members function to prevent rotation of the film winding shaft and winding knob upon completion of film winding.



3,675,556

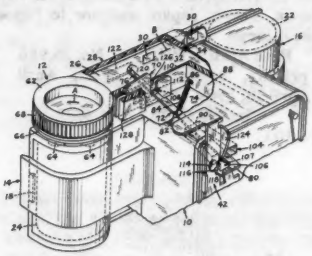
DOUBLE EXPOSURE PREVENTION SYSTEM AND CAMERA

Venerio J. Rigolini, Brooklyn, N.Y., assignor to Whitehouse Products, Inc., Brooklyn, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,439

Int. Cl. G03b *19/04*

U.S. Cl. 95—31 FL **6 Claims**



A camera having a compact metering device to control film advancement and a double exposure prevention system which permits operation of the shutter when there is no film in the camera, but blocks the shutter's operation when the camera is loaded with film until an unexposed portion of the film is advanced to the point where it is suitably framed for taking a picture. A metering pawl moves rearwardly in the camera under the influence of a tension spring to permit operation of the shutter when the camera is unloaded. When the camera is loaded with film the member is engaged either with the film or with the film cartridge through a perforation in the film, thus preventing the camera from being operated until the film is suitably advanced to ready the camera for taking a picture.

3,675,557

MIRROR MOVING MECHANISM FOR SINGLE-LENS REFLEX CAMERAS

Junichi Yokozato, and Shigeru Kurihara, both of Tokyo, Japan, assignors to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1969, Ser. No. 828,463

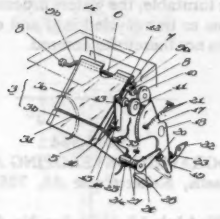
Claims priority, application Japan, June 5, 1968, 43/38125

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **4 Claims**

A single-lens reflex camera wherein the device which reflects light against the focussing screen consists of a single mirror which is pivotable at a point close to its upper edge or of two discrete mirrors which are pivotable in opposite directions with reference to each other. The single mirror is

pivotable from a position at an angle of 45° with reference to the optical axis to a position in which its reflecting surface faces the focussing screen by pivoting and by simultaneously moving rearwardly and upwardly so as to permit the placing of the lens close to the plane of an unexposed film frame. If the light is reflected by two discrete mirrors, one of the mirrors is movable in the same way as the single mirror or about a fixed



pivot axis, and the other mirror is pivotable to a concealed position behind an internal wall of the camera body. The single mirror or the two discrete mirrors can automatically return to operative positions upon completion of each exposure or they can be held in inoperative positions during the interval between the completion of an exposure and the next following transport of film or as long as desired.

3,675,558

OPTICAL SYSTEM FOR A SINGLE LENS REFLEX CAMERA

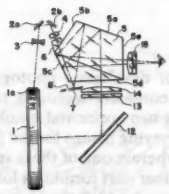
Yoshio Kuramoto, Sakai-shi, and Shotaro Inagaki, Okazaki-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 10, 1969, Ser. No. 865,453

Claims priority, application Japan, Oct. 19, 1968, 43/91391

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **2 Claims**



A single lens reflex camera in which an external scale for adjusting the focus or shutter of a camera is visible with the object image in a viewfinder. Between the scale and a viewfinder there are provided a pentagonal prism and a convergent lens for forming a real image of the scale at the viewfinder eyepiece.

3,675,559

PENDULOUS TYPE RANGEFINDER FOR OPTICAL INSTRUMENT

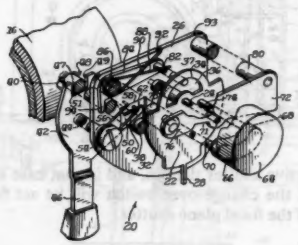
Stanley R. Freeland, Glenview, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 31, 1969, Ser. No. 889,761

Int. Cl. G03b *3/00*

U.S. Cl. 95—44 C **14 Claims**

A pendulous type rangefinder for a camera is provided that can be adjusted either manually or automatically without having to either engage or disengage the manual adjustment with the pendulous member of the rangefinder. The rangefinder includes an objective lens system having a focusing element and comprises a pendulous member supported on the camera housing for selective conditioning between a free-swinging first condition and a retained second condition, a cam surface on the pendulous member, and a focusing element positioning means frictionally engageable with the cam surface for moving the focusing element. Means are provided for continuously urging the positioning means toward the cam surface, and a



manual control extending externally of the camera housing and always engaged with the pendulous member permits force applied to the manual control to be directly transmitted to the pendulous member for directly moving the pendulous member at all times.

3,675,560

PHOTOGRAPHIC TYPE-COMPOSING

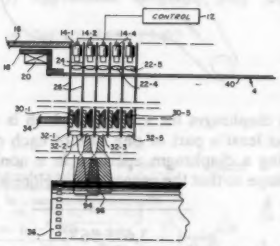
Louis M. Moyroud, c/o Photon, Inc., 355 Middlesex Avenue, Delray Beach, Fla.

Filed Aug. 13, 1970, Ser. No. 63,490

Claims priority, application Great Britain, Aug. 15, 1969, 40,888/69

Int. Cl. B41b *15/00, 21/12*

U.S. Cl. 95—4.5 R **6 Claims**



A high speed straight matter photocomposing machine for projecting proportionately-spaced character images on an image-receiving surface in order to compose lines of type of graphic arts quality at computer print-out speeds.

3,675,561

PHOTOGRAPHIC CAMERA WITH FOCAL PLANE SHUTTER AND INTERCHANGEABLE OBJECTIVE SHUTTER

Gerhard Schwarz, Munich, Germany, assignor to Compur-Werk Gesellschaft mit beschrankter Haftung & Co., Munich, Germany

Filed April 7, 1971, Ser. No. 131,872

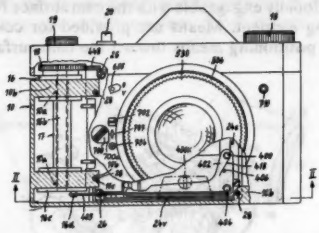
Claims priority, application Germany, April 9, 1970, P 20 17 032.5

Int. Cl. G03b *9/00*

U.S. Cl. 95—53 E **13 Claims**

A photographic camera having a focal plane shutter and also having an interchangeable objective unit including an objective shutter, together with electronic control means for controlling the operations of both shutters. A simple change-over switch enables the user to select which of the two shutters

will be effective to control any particular exposure. The camera may also be used with a simple objective unit not having an objective shutter therein, and in that case an interlock insures that the change-over switch will be set for effective operation of the focal plane shutter.

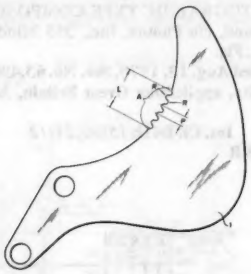


3,675,562

IRIS DIAPHRAGM FOR A CAMERA

Noriaki Sanada, Tokyo, and Masaharu Ito, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 24, 1970, Ser. No. 49,459
Claims priority, application Japan, June 28, 1969, 44/51746
Int. Cl. G03b 9/06
U.S. Cl. 95—64 R 8 Claims



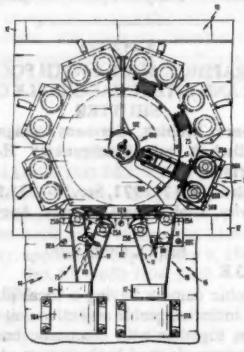
An iris diaphragm for a camera which is characterized in forming at least a part of one side of each diaphragm blade constituting a diaphragm aperture in a nonlinear, concavo-convex shape so that the generation of glare is reduced.

3,675,563

SEMICONDUCTOR PROCESSING APPARATUS

Claude G. Metreaud, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,162
Int. Cl. G03d 5/04
U.S. Cl. 95—89 R 28 Claims



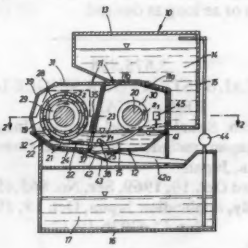
Apparatus for processing semiconductor wafers including an indexing turntable having a plurality of sets of radially slidable pickup heads connected thereto, the sets of pickup heads cooperating with a plurality of sets of process stations spaced about the turntable whereby the wafers held by one of the pickup heads of a set are moved into and out of alternate ones of the process stations during the process cycle. The apparatus also includes air slide conveyors for moving wafers into and out of registration with the vacuum type pickup heads, and also includes apparatus which enables, after one rotation of the turntable, the wafers processed in one group of process stations to be recycled into and out of the group of process stations not theretofor entered.

3,675,564

PHOTOGRAPHIC DEVELOPING APPARATUS

Werner Michaelis, Kelterstrasse 45, 7053 Rommelshausen, Germany

Filed July 13, 1970, Ser. No. 54,248
Claims priority, application Germany, July 24, 1969, P 19 37 591.8
Int. Cl. G03d 1/02
U.S. Cl. 95—90 15 Claims



An apparatus for developing photographic material comprising a treating container having a trough-shaped bottom part and containing two horizontal spools for alternately winding up beltlike conveying means for the photographic material to be developed, wherein one of these spools is located within a removable container part forming a loading magazine which has an opening through which the conveying means may pass, and wherein this removable container part when connected to the other part of the container engages with and forms a part of the trough-shaped bottom part of the container which is filled with the treating liquid which is circulated therethrough.

3,675,565

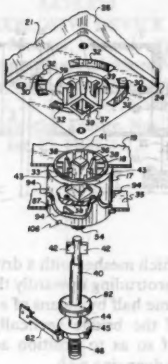
PHOTOGRAPHIC APPARATUS

Armin B. Pagel, Janesville, Wis., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 7, 1970, Ser. No. 26,275
Int. Cl. G03b 15/035
U.S. Cl. 95—11 L 5 Claims

The disclosure relates to the provision of a camera with a mechanism which operates automatically prior to each film exposure to index a so-called flashcube or other multiple lamp flashbulb unit until the mechanism detects the arrival of an unfired bulb at a predetermined firing position. In contrast to previously known related devices which require the flashbulb unit to be installed before the film is advanced in preparation for the corresponding exposure, the invention allows the automatic indexing operation to be performed regardless of whether the flashbulb unit is installed before or after such film advancement has occurred. Means are also disclosed whereby

such a mechanism is capable of performing repetitively between successive film advancing operations so that a replacement flashbulb unit can be indexed automatically after



the mechanism has already indexed the previous flashbulb unit and has failed to detect the presence of any usable bulb therein.

3,675,566

VEHICLE BODY HEATING AND VENTILATING

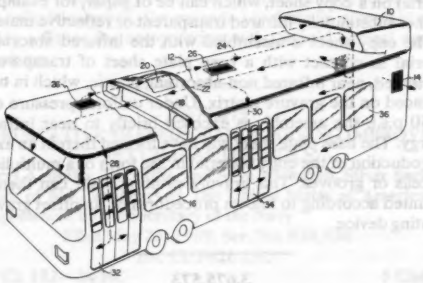
John McHugh, Gorsey Lane Farm, Mawdsley, Lancashire, and Gerald Fowler, 5 Marsden Close, Eccleston, Lancashire, both of England

Filed July 3, 1968, Ser. No. 742,275

Claims priority, application Great Britain, July 5, 1967, 30,981/67; July 5, 1967, 30,982/67

Int. Cl. B60h *1/24*

U.S. Cl. 98—2.07 **1 Claim**



A passenger vehicle having ducts formed within a roof between the latter and a lining, so that the vehicle will be ventilated and means are provided to deliver air above the windshield to be demisted and defrosted.

3,675,567

MEAT INJECTION APPARATUS

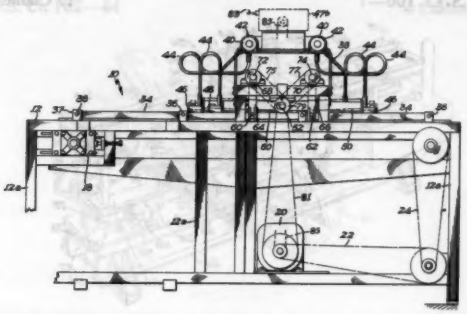
Jack J. Rejsa, Minneapolis, and James A. Meyer, Saint Louis Park, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed June 8, 1970, Ser. No. 44,297

Int. Cl. A23l *3/34*

U.S. Cl. 99—257 **5 Claims**

Apparatus for injecting seasoning and flavoring liquids into poultry meat composed of a storage reservoir or hydraulic accumulator from which fluid is pumped at a pressure between about 1,000 and 5,000 psi to injection nozzles under the control of a solenoid valve. Each solenoid valve is turned rapidly on and off by an electronic timer. As the nozzles are moved at



the same speed of the meat to be injected, a high velocity jet of liquid lasting 0.1 to 0.5 seconds is shot from the nozzle into the meat and is dispersed in the tissue.

3,675,568

PRESS ASSEMBLY FOR COMPACTING AND BINDING WIRE COILS

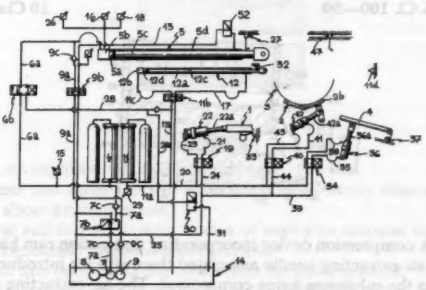
Ghislain Antoine Jean-Marie Martelee, Liege, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdoz, en abrege "Cockerill,", Seraing-lez-Liege, Belgium

Filed July 28, 1970, Ser. No. 58,936

Claims priority, application Belgium, July 28, 1969, 737.690

Int. Cl. B65b *13/02*

U.S. Cl. 100—7 **3 Claims**

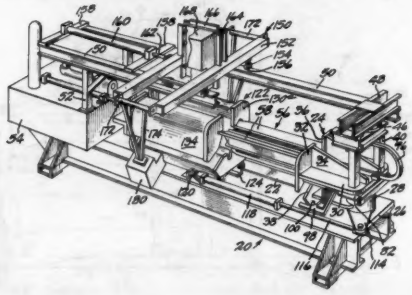


A press for compacting and binding wire coils on a spool which incorporates a medium pressure and a high pressure hydraulic fluid pump in conjunction with a low pressure and a medium pressure oil-pneumatic accumulator for operating the hydraulic jacks for compressing and binding the wire coils and removing the bound coils from the compressing mechanism. The invention utilizes a plurality of pressure controls for actuating electric control valves to selectively connect either of the hydraulic pumps to the hydraulic cylinders when higher pressure and fluid flow are required, or the oil-pneumatic accumulators to the hydraulic cylinders when lower pressure and little fluid flow is required, in order to obtain the most efficient operation of the press.

3,675,569
ROD COIL PRESS

Herman L. Moor, Chicago, Ill., assignor to Braner Engineering, Inc., Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 78,006
Int. Cl. B65b *13/02*
U.S. Cl. 100—7 19 Claims

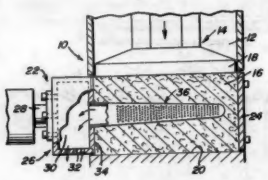


A rod coil press having a coil carrying arm swinging to and from loading, compacting and unloading positions. The arm is Y-shaped in cross section and one part thereof is extensible to a coil-diameter-controlling position and retractable to a coil-release position. A compactor unit shifts toward and from the arm which interfits therewith in compacting position. A strapping assembly is shiftable between retracted and operative positions and has a plurality of strapping mechanisms. Strap guides are carried by the coil carrying arm and the compactor unit and cooperate with the strapping mechanisms to apply a plurality of straps through the eye of the coil and around the exterior of the coil to be tensioned and sealed by the strapping mechanisms.

3,675,570
COMPRESSION DEVICE

Philip G. Mersfelder, P.O. Box 21, Helena, Calif.

Substitute for Ser. No. 729,630, May 16, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,222
Int. Cl. B30b *9/00, 9/02, 15/32*
U.S. Cl. 100—90 10 Claims



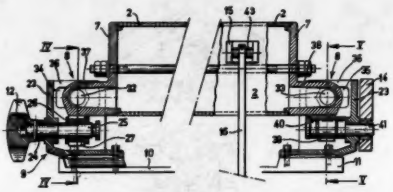
A compression device incorporating an ejection ram having an air extracting needle associated therewith for introduction into the substance being compressed. The air extracting needle is communicated with the atmosphere and provides a flow path for the entrained air within the material during the compression thereof.

3,675,571
SCREEN PRINTING MACHINE FOR PRINTING IN MULTICOLOR A HORIZONTALLY ADVANCED WEB

Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed June 30, 1970, Ser. No. 51,042
Claims priority, application Netherlands, July 9, 1969, 6910511
Int. Cl. B41f *15/04*
U.S. Cl. 101—115 9 Claims

A screen printing machine for multi-color printing on a web which is advanced horizontally on a supporting blanket includes parallel frame halves across which are mounted bridges. Each bridge has stencil holders for journaling the ends of cylindrical thin-walled screen stencils with there being one bridge for each stencil and the bridges extending parallel to the respective stencils. At least one end of a stencil is provided with a gear which meshes with a driving gear mounted in the frame half and protruding upwardly therefrom. The bridge is mounted on a frame half by means of a structure which permits adjustment of the bridge vertically longitudinally and transversely thereof so as to position accurately the stencil with respect to the advancing web.



3,675,572
GRAVURE PRINTING PLATE MAKING PROCESS

Earl J. Gosnell, Rochester, and Jerry H. Taylor, Webster, both of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

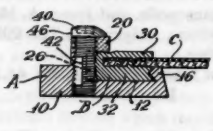
Continuation-in-part of Ser. No. 791,115, Jan. 14, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,411
Int. Cl. B41c ; B41n
U.S. Cl. 101—401.1 6 Claims

A method for quickly making an intaglio or gravure printing plate through the use of near infrared irradiation. A pattern of protuberances or grooves is formed on a surface of near infrared transparent, moldable plastic, glass, or quartz which is not deformable at the temperature used in practicing the invention. This gravure matrix can be in the form of a sheet, endless belt, or plate. The information to be reproduced can be printed, written, or drawn in highly near infrared absorbing material on a copy sheet, which can be of paper, for example, or other substantially infrared transparent or reflective material. The copy sheet is assembled with the infrared absorbing material in contact with a base plate sheet of transparent, unoriented, near infrared non-absorbing plastic, which in turn is placed on the gravure matrix. Under uniform pressure of 5 to 50 p.s.i. the assembly is exposed briefly to near infrared energy. The base plate sheet will have formed therein an exact reproduction of the copy material in the form of a multiplicity of cells or grooves. This gravure printing plate can then be mounted according to known procedures on an offset gravure printing device.

3,675,573
BLANKET BAR AND ADAPTER BAR ASSEMBLY FOR PRINTING BLANKET

Ronald W. Hawks, Des Plaines, Ill., assignor to Roberts & Porter, Inc.

Filed Sept. 1, 1970, Ser. No. 68,728
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 3 Claims



An assembly for attaching a printing blanket on a press cylinder of an offset printing press.

An adapter bar and blanket bar are provided with cooperating features which provide interlocking engagement for quick and easy mounting by way of a quick release locking means.

3,675,574

EXPLOSIVE DEVICE

Andre Jules Pierre Moreau, Yonne, France, assignor to Societe: Etablissements Davey Bickford Smith & Cie Societe Anonyme Francaise, Saint Maur Rouen, France

Filed Oct. 26, 1970, Ser. No. 83,840
Claims priority, application France, Nov. 28, 1969, 6941252
Int. Cl. F42b *3/12*
U.S. Cl. 102—24 11 Claims

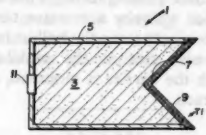
The invention is concerned with an explosive device for seismological marine reconnaissance, the device comprising a tubular casing containing the explosive charge and a detonator in which the detonator is provided with a plastics closure plug the plug being extended so that it projects beyond the end of the detonator and engages in the bottom opening in the casing containing the charge so as to seal the same against the ingress of seawater. To increase the sealing action the bottom end of the casing may comprise a conical portion terminating in a cylindrical neck, the extended end of the aforesaid plug having a flange for co-operation with the said conical end of the casing.

3,675,575

CORUSCATIVE SHAPED CHARGE HAVING IMPROVED JET CHARACTERISTICS

Robert A. Bailey, Rockville, and Arve Michelsen, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 23, 1969, Ser. No. 828,450
Int. Cl. F42b *1/02*
U.S. Cl. 102—24 HC 5 Claims



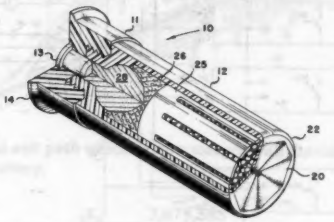
The present invention provides a high penetration shaped charge coruscative ordnance device which produces a slug-free jet of improved effective length, thereby maximizing penetration and enhancing vaporific effects. Substantially, the invention improves the length of the jet by utilizing a powdered stoichiometric mixture of coruscative reactants such as Ti+C in a pressed conical liner. Additionally, jet density may be improved by inclusion of a high density material in the mixture.

3,675,576

RELOADABLE TWO-PIECE SHOTGUN CARTRIDGE

Charles D. Whitney, Pasadena, Calif., assignor to Colorado Business Development Corporation

Filed Feb. 18, 1970, Ser. No. 12,323
Int. Cl. F42b *7/06*
U.S. Cl. 102—44 4 Claims



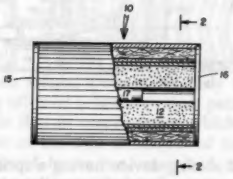
A 2-piece, all plastic, reloadable shotgun cartridge contains the conventional elements of a shotgun cartridge, i.e., shot, wadding, primer and a powder charge. A crimp step makes for easier crimping; a self-locking feature is provided by serrations; and powder reloading can be easily accomplished from both ends of the shell casing portion of the cartridge.

3,675,577

ROD WARHEAD

Hyman M. Sternberg; Dante Piacesi, Jr., both of Silver Spring, and Howard Katz, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 30, 1964, Ser. No. 380,117
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 10 Claims



1. An explosive warhead comprising,
inner and outer metallic cylinders concentrically disposed about a common axis,
first and second annular bodies of explosive material concentrically disposed about said axis,
said first body being disposed within the inner cylinder,
said second body being positioned radially between said cylinders in contact with one of said cylinders and being radially spaced from the other cylinder, and
means connected to the first body for igniting the first body of explosive material prior to the detonation of the second body of explosive material.

3,675,578

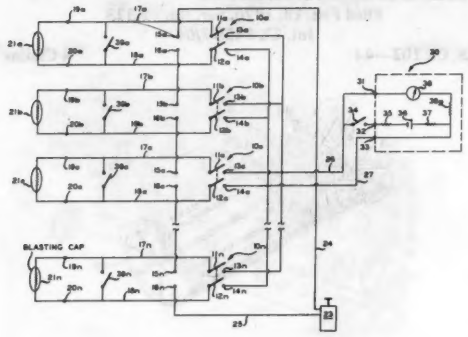
APPARATUS FOR TESTING AND DETONATING BLASTING CAPS

Gary D. Douglas, and Billy J. Eaves, both of Clinton, Okla., assignors to Phillips Petroleum Company

Filed Jan. 28, 1970, Ser. No. 6,405
Int. Cl. F42b *5/08, 9/08, 21/38*
U.S. Cl. 102—70.2 3 Claims

Apparatus is provided for testing individually a plurality of

blasting caps and for detonating such caps simultaneously. A plurality of double-pole, double-throw switches to serve to



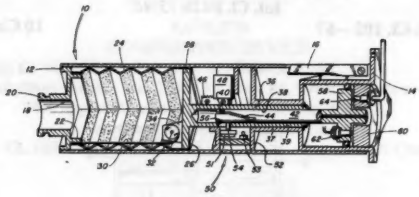
connect the blasting caps selectively to a circuit continuity meter or to a detonating device.

3,675,579

PRESSURE ACTUATED SAFETY AND ARMING DEVICE

Sherman L. Min, Upper Marlboro, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 25, 1970, Ser. No. 17,993
Int. Cl. F42b *9/08*
U.S. Cl. 102—70.2 **1 Claim**



A safety and arming device having a spring biased bellows inflatable under air pressure of a predetermined magnitude. A tube is connected to the bellows and a stud is fixed to the inside of the tube. A shaft having a helical slot formed therein fits into the tube with the stud extending into the helical slot and an arming rotor is fixed to the end of the shaft. Under air pressure of a predetermined magnitude, the bellows expands and moves the tube which causes the stud, which is fixed to the inside of the tube and riding in the helical slot, to rotate the shaft and thereby rotate the arming rotor. A gear rack connected to the outside of the tube is in engagement with an escapement mechanism to limit the rate of travel of the bellows to preclude premature arming under the influence of shocks.

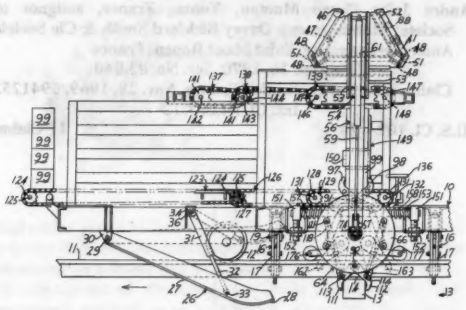
3,675,580

APPARATUS FOR REPLACING OLD CROSS TIE WITH NEW CROSS TIE

Royce G. Kershaw, Montgomery, Ala., assignor to Kershaw Manufacturing Company, Inc.

Filed Jan. 18, 1971, Ser. No. 107,163
Int. Cl. E01b *29/06*
U.S. Cl. 104—9 **9 Claims**

Rotatable turret carried by transverse frame adapted for lateral movement relative to supporting frame extending longitudinally of railroad track. Cross tie grippers on turret engage old and new ties concomitantly to extract old tie and extract new tie from source of supply while rails elevated. Turret rotated after old tie extracted to release old tie at location removed from point of extraction then rotated to position new



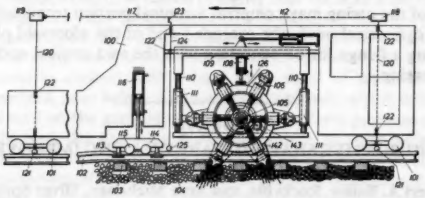
tie at point of extraction of old tie. Transverse frame then moved inwardly to insert new tie and rails then lowered. Tie plate grippers engage opposite sides of tie plates while rails elevated and release tie plates upon lowering rails onto new tie.

3,675,581

MOBILE TRACK TAMPING MACHINE

Franz Plasser, and Josef Theurer, both of Johannesgasse 3,, Vienna 1, Austria

Filed July 13, 1970, Ser. No. 54,470
Claims priority, application Austria, July 24, 1969, 7177/69
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 **22 Claims**



A rotatable tamping tool carrier mounts a series of successive vibratory tamping tools extending in a vertical plane parallel to the track like spokes in a wheel about an axis of rotation extending transversely of the track. The tamping tool ends extend in a circle passing through the cribs beneath the tamping tool carrier whereby successive tamping tools continuously and successively tamp the ballast in successive cribs and under successive ties as the mobile track tamping machine, on which the carrier is mounted, continuously advances along the track.

3,675,582

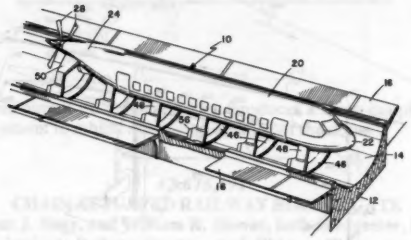
MASS TRANSPORTATION SYSTEM

Peter F. Girard, La Mesa, and John M. Peterson, San Diego, both of Calif., assignors to Teledyne Ryan Aeronautical Company, San Diego, Calif.

Filed Aug. 5, 1970, Ser. No. 61,311
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 R **14 Claims**

A high speed mass transportation system, in which a train unit rides in an arcuately concave, narrow guideway and is

aerodynamically supported on airfoils conforming to the arcuate form of the guideway. The center mass of the vehicle is below the center of radius of the guideway, which provides a self-stabilizing and automatic banking action in high speed turns, so that passengers are not subjected to lateral accelerations. The airfoils are spaced several inches above the



guideway at cruising speed, so that the surface finish of the guideway is not unduly critical and cost is minimized. Retractable wheels are provided for supporting the train unit at low speeds and on flat surfaces. Propulsion may be by means of direct thrust, such as a propeller, or by electrical drive means, such as a linear induction motor.

3,675,583

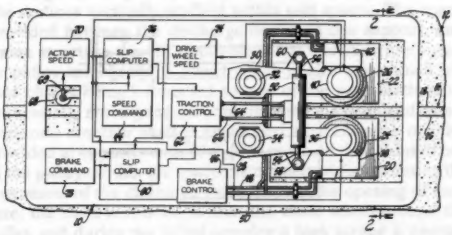
SPEED AND SLIP CONTROLLED TRACTION DRIVE

Albert J. Sobey, Bloomfield Hills, and Richard H. Donlon, Troy, both of Mich., assignors to Transportation Technology, Inc., Madison Heights, Mich.

Filed Oct. 29, 1969, Ser. No. 872,021

Int. Cl. B60v *3/04*; B61c *15/08*; B61f *9/00*

U.S. Cl. 104—23 FS **13 Claims**



A controlled traction vehicle gripping drive and brake system including a vehicle supported relative to a roadway having a fixed central vertical rail, a pair of drive-brake wheels mounted on the vehicle for rotation about vertical axes, and hydraulic control means for varying the caliper loading between the wheels and the faces of the rail to control wheel slip under vehicle cruise, acceleration, and deceleration conditions.

3,675,584

TRANSPORTATION SYSTEM

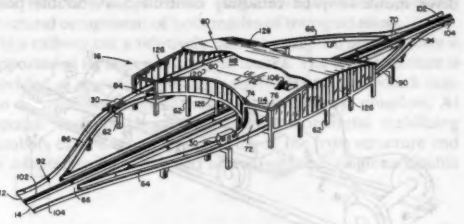
Edwin F. Hall, Sharon, Mass., assignor to Alden Self-Transit Systems Corporation, Bedford, Mass.

Filed June 1, 1970, Ser. No. 41,955

Int. Cl. B61b *1/02*; E01f *1/00*

U.S. Cl. 104—28 **2 Claims**

A station arrangement in a transportation system that has two parallel travel arteries and has four distinct service areas. A station access path extends from each travel artery and divides into two station service paths at a junction. Each station service path passes a corresponding station service area and then merges with a service path from the other access path to



form an exit path which in turn merges with the corresponding travel artery.

3,675,585

HANDLING CONVEYORS HAVING SELF-PROPELLED TROLLEYS

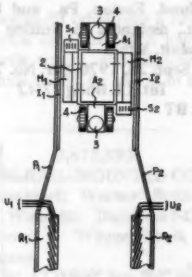
Albert Wiart, Sannois, and Simon Cynober, Paris, both of France, assignors to Jeumont-Schneider, Paris, France

Filed Mar. 15, 1971, Ser. No. 123,967

Claims priority, application France, March 17, 1970, 7009480

Int. Cl. H02k *41/02*

U.S. Cl. 104—148 LM **4 Claims**



A process which relates more particularly to handling of conveyors having off-level sections in their path. The process is characterized in that in every section which is other than level, at least one of the side armatures of the conveyor is omitted and replaced by an a.c. energized auxiliary linear motor field. While a self-propelled trolley is moving in the section other than level, at least one of the fields of the trolley, namely the field corresponding to the omitted side armature, is disconnected from its energizing a.c. circuit by appropriate means and simultaneously connected to variable impedances so as to behave like an armature in relation to the auxiliary field, the impedances behaving like armature impedances, so that the system lakes the form of an auxiliary variable-speed linear motor associated with each off-level section. The auxiliary linear motor provides the power or extra power for driving or retarding the trolley while the same is travelling in the off-level, the trolley speed in the off-level section thus being maintained substantially equal to the trolley speed in the level zones.

3,675,586

CONTROL SYSTEM FOR DUAL RAIL MODEL ELECTRIC VEHICLES

Albert G. Haddad, 7806 Corregidor Road, Armed Forces Staff College, Norfolk, Va.

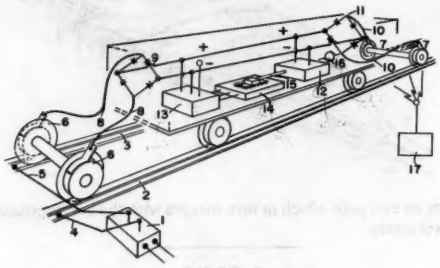
Filed Sept. 19, 1969, Ser. No. 859,371

Int. Cl. B60l *15/14*

U.S. Cl. 104—149 **6 Claims**

A dual rail model electric vehicle control system including a transmitter for sending signals to a receiver mounted on the

vehicle. The receiver is connected to a servo motor which, in turn, is connected to a double pole rheostat, whereby the direction and amount of current flowing to the vehicle electric drive motor may be remotely controlled. A double power



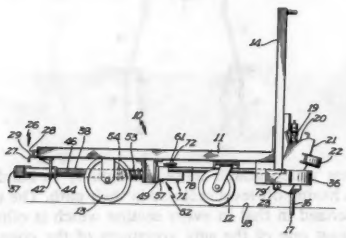
pick-up is connected to the vehicle wheels which conduct the current from the rails to a double bridge rectifier arrangement, the output of which is connected to the receiver and rheostat.

3,675,587

TOW LINE TRUCK AND BUMPER SYSTEM

Stanley L. Zetterlund, Easton, Pa., and Robert O. Skogen, Faribault, Minn., assignors to Nutting Truck and Caster Company, Faribault, Minn.

Filed Sept. 28, 1970, Ser. No. 76,054
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 BT **11 Claims**



A truck for tow line use is provided with an improved movable bumper construction. A preferred form of such movable bumper construction includes a longitudinally extending shaft on such bumper, means supporting the shaft for longitudinal movement between first and second positions, means normally urging the shaft and bumper toward one of said positions, and latching means for selectively locking the movable bumper in each of its first and second positions. The specific latching means includes at least one angularly movable locking washer through which a bumper shaft projects, the washer being angularly movable between a position in which the shaft is freely movable in either direction, and at least one position inclined to the axis of the shaft for locking engagement to prevent movement of the shaft in one direction.

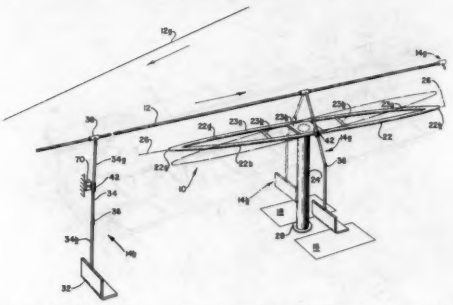
3,675,588

SKI LIFT APPARATUS

Paul E. Gaynor, 174 Lowell St., Arlington, Mass.

Filed May 5, 1970, Ser. No. 34,851
Int. Cl. B61b *11/00*
U.S. Cl. 104—173 **12 Claims**

A ski lift employs an endless cable loop with chairs, T-bars or the like suspended from the cable by way of hangers. A loading station selector is located below one run of the cable loop near the bottom thereof and the loading stations for the lift are located at each side of the selector midway along its length. Another similar selector is stationed at the top of the slope. Each selector has two operative positions. When it is in one position, an oncoming chair is diverted sideways to one side of the cable run so that it passes through one loading sta-



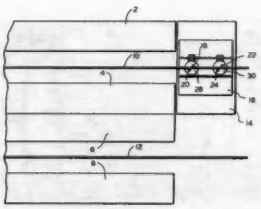
tion. After this chair leaves its loading station, the selector switches to its other operative position, whereupon the next oncoming chair is diverted sideways to the other side of the cable run so that it passes through the other loading station. This process is repeated with successive oncoming chairs being guided alternately to the two loading stations.

3,675,589

TRANSFER CAR GUIDANCE SYSTEM

Calvin W. Hunter, Battle Creek, Mich., assignor to Clark Equipment Company

Filed Feb. 17, 1971, Ser. No. 115,947
Int. Cl. B60s *13/02*; B61j *1/10*; B65g *65/02*
U.S. Cl. 104—247 **7 Claims**



A transfer guidance system for a self-propelled stacker having means to raise and rotate a gripping guidance plate on the stacker to place guidance rolls in contact with a guidance rail and thus guide the stacker along the rail.

3,675,590

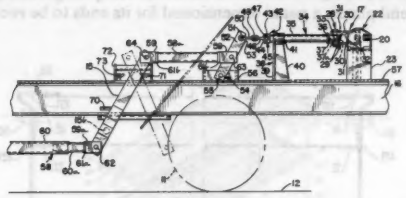
DOOR OPERATING MECHANISM

James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 12, 1969, Ser. No. 884,424
Int. Cl. B61f *9/00*
U.S. Cl. 105—240 **14 Claims**

This invention relates to a railroad hopper door operating mechanism which incorporates a reciprocating scissor drive in opening and closing railway car hopper doors. In particular, the mechanism utilizes a manually operated scissors link means which converts rotation of a transverse reversely threaded shaft into longitudinal movement of an input drive link which through a lost motion connection transmits forces to the output drive link to the door operating levers for open-

ing and closing of the hopper car doors and yet isolates damaging forces from the scissors link means. The input drive



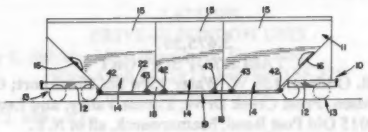
versus output drive construction produces a force couple arrangement to inhibit accidental opening of the doors.

3,675,591

CHAIN ACTUATED RAILWAY HOPPER GATE

Ernest J. Nagy, and William R. Shaver, both of Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed June 1, 1970, Ser. No. 42,369
Int. Cl. B61d 7/02, 7/20, 7/26
U.S. Cl. 105—253 9 Claims



A hopper car including a plurality of longitudinally spaced discharge openings forming a trough type discharge arrangement having converging slope sheets which provide a plurality of spaces separating the discharge openings. A discharge gate arrangement includes a closure gate for each of the discharge openings, the gate comprising a plurality of individual sections which are sequentially movable into the spaces between the discharge openings to an out-of-the-way open position with the sections vertically stacked within said spaces. The spaces provided between the discharge openings also support, on a frame structure therein, rotatable shafts including reel means or pulley arrangements about which chains are trained, the said chains being connected to one of the gate sections for sequentially moving the sections between the open and closed positions. Another shaft is positioned adjacent each opening provided at opposite ends of the car to which the chains of one of the pulleys within the space are connected for operating the movement of the discharge gates. During the opening of each gate, the shaft is rotated so that the chain winds around the pulley and during the initial opening a high torque is exerted on the first gate section to move the same and the speed of the initial movement is comparatively slow. As the chain further winds onto the pulley, the gate sections are moved more rapidly and less torque is exerted by virtue of the chain winding. The converse is achieved when it is desired to close the gate; the other cooperating shaft and pulley initially exert a high operating torque to move the first section of the gate and as the chain winds about the last mentioned pulley the diameter increases lessening the torque and increasing the speed of operation.

3,675,592

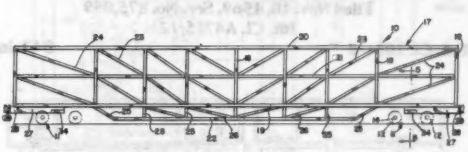
TRUSS-TYPE CARGO CARRYING VEHICLE

Norman E. Bateson, Munster, Ind., and William L. Pringle, Grosse Pointe Shores, Mich., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 20, 1970, Ser. No. 65,461
Int. Cl. B60p 3/06
U.S. Cl. 105—368 R 24 Claims

A truss structure includes upper and lower beams with vertical interconnecting beams on which cargo of any type may be suspended. The truss structure is adapted to be supported on horizontally spaced wheel suspensions, such as is common in over-the-highway vehicles, or it may be disposed in and be connected to structural components in aircraft wherein the truss structure supports the cargo and provides a primary structural component of both modes of transportation.

In a railway car a relatively narrow upright truss structure is supported at its opposite ends on trucks. The truss structure is provided at opposite ends with short sill sections which contain coupler housings supporting conventional couplers. At opposite ends of the truss structure horizontal stabilizing members extend laterally outwardly of the truss structure and are adapted to be connected to conventional single or double



axle trucks in conventional fashion. The narrow truss structure is the sole structural support of the car and provides on opposite sides thereof, between the trucks, a free and unencumbered space to which ready access may be had by suitable powered handling devices which may lift cargo into position to be connected and suspended on opposite sides from said truss structure.

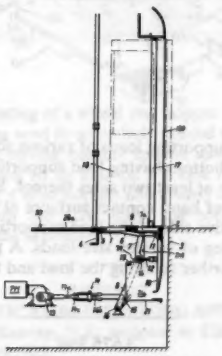
A modified embodiment comprises a railway car which includes a pair of truss sections which have outer ends supported on single axle trucks, and adjacent inner ends supported on double axle trucks by means of an articulated connector assembly.

3,675,593

STAIRWAY FOR RAIL-MOUNTED CONVEYANCES

Franz Tonne, Dusseldorf; Werner Brand, Bergisch Neukirchen; Benno Wolowitz, Dusseldorf-Gerresheim, all of Germany, assignors to Waggonfabrik Verdingen A.G., Dusseldorf, Germany

Filed Dec. 11, 1969, Ser. No. 884,179
Int. Cl. B61d 23/02
U.S. Cl. 105—447 14 Claims



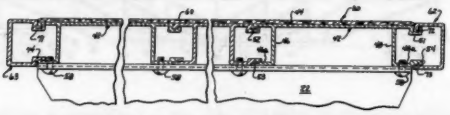
A stairway for use in streetcars or subway cars wherein a portion of the floor constitutes the uppermost step and is spaced inwardly from a lowermost step which is fixedly secured to the chassis. An auxiliary step which has two hingedly connected panels is movable between a first position in which the two panels constitute an extension of the uppermost step and overlie the lowermost step so that the floor can be

reached from a relatively high subway platform, and a second position in which one of the panels extends downwardly from the uppermost step and the other panel extends horizontally between the levels of the uppermost and lowermost steps to constitute an intermediate step whereby the stairway is ready to be used on streetcars to permit boarding from a low street curb.

3,675,594
DRAFTING TABLE

Victor J. Kritske, Sheboygan, Wis., assignor to Mayline Company, Inc., Sheboygan, Wis.

Filed Nov. 10, 1969, Ser. No. 875,059
Int. Cl. A47b 5/12
U.S. Cl. 108—2 **8 Claims**

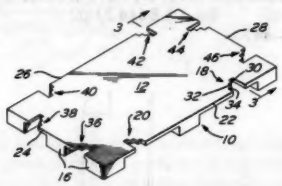


The drafting table includes a base, a pair of support brackets pivotally mounted on the base, and a drafting board mounted on the brackets for both vertical and angular adjustment. The drafting board includes a plurality of identical metal sections, a working sheet overlying the sections, and a peripheral metal frame. The metal sections have interfitting means integral therewith for holding the sections together. The interfitting means includes a depending tongue element of generally uniform width and a downwardly diverging groove element.

3,675,595
PALLET

Matthew A. Sullivan, Elkins Park, Pa., assignor to Sullifoam, Inc., Willow Grove, Pa.

Filed April 20, 1970, Ser. No. 29,812
Int. Cl. B65d 19/00
U.S. Cl. 108—51 **6 Claims**



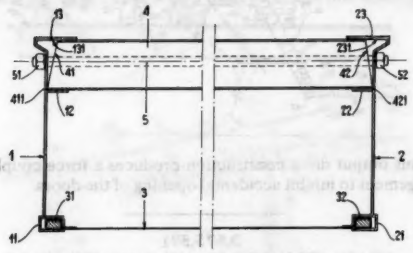
A pallet for supporting loads of various sizes. The pallet includes a pallet bottom having load supporting surface having notch means on at least two sides thereof. Each notch means has a plurality of band contact surfaces at varying distances from its respective side of the load supporting surface to permit tight banding of various size loads. A pallet top may be provided for further securing the load and to permit stacking of the pallets.

3,675,596
LOAD-CARRYING PALLET

Francois Colas, Bourg La Reine, France, assignor to Cegedur GP, Paris, France

Division of Ser. No. 779,740, Nov. 29, 1968, Pat. No. 362,869.
This application May 11, 1970, Ser. No. 48,710
Int. Cl. B65d 19/00
U.S. Cl. 108—51 **12 Claims**

A pallet for supporting materials comprising a pair of end sections of similar construction formed of a vertically disposed end plate, a pair of flanges extending inwardly substantially perpendicularly from the upper end portion of the end plate in vertically spaced apart parallel relation and a slideway in the form of a tubular section on the lower end portion of each of the end plates, a panel dimensioned for its ends to be received

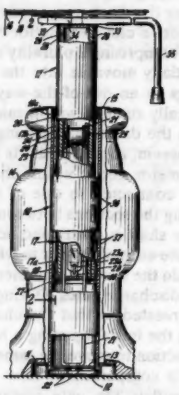


between the respective flanged pairs of the end plates and a base plate extending across the pallet with the ends of the base plate received in engagement within the slideways and means for securing the elements in their assembled relationship to form the pallet.

3,675,597
TABLE TOP SUPPORT

Trygve R. Oddsen, 136 W. Water View St., Northport; Gustav A. Oddsen, Frost Creek Drive, Locust Valley, and Leo Edelson, 1015 Old Post Road, Mamaroneck, all of N.Y.

Filed May 20, 1969, Ser. No. 826,092
Int. Cl. A47b 9/02
U.S. Cl. 108—136 **7 Claims**



Vertical adjustable support for a table top utilizing a spring assembly to counterbalance the table top at any of an infinite number of levels and to cooperate with a compressive locking mechanism actuated by a conveniently positioned simple manual control member to effect a stable, rigid columnar structure at selected adjusted height levels of the table top.

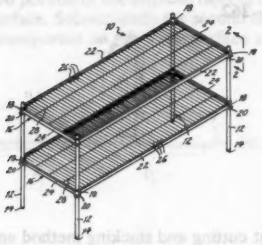
3,675,598
ADJUSTABLE SHELVING

Sol Kesilman; Milton Kravitz, both of Cheltenham, and Hyman B. Penn, Glenside, all of Pa., assignors to William Hodges & Co., Inc., Philadelphia, Pa.

Filed Nov. 4, 1970, Ser. No. 86,665
Int. Cl. A47b 9/00
U.S. Cl. 108—144 **8 Claims**

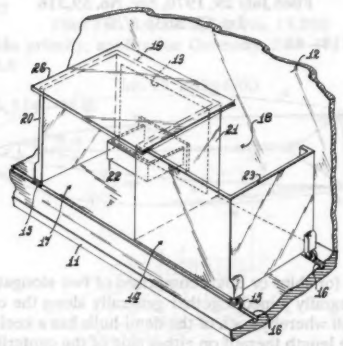
Adjustable shelving pieces supported on uprights, each piece of shelving including shelf collars at the corners thereof, each upright being provided with a shelf support that is

secured to the upright by a tightening screw, the outer surface of the shelf support tapering outwardly downwardly, said shelf collar having an interior surface that also tapers outwardly



downwardly with said shelf collar being placed about said shelf support in a snug fit and held in place by said shelf support.

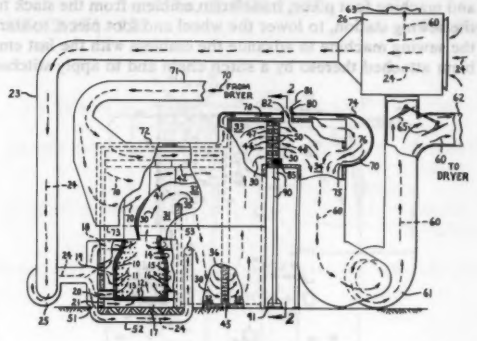
3,675,599
DRIVE-IN WINDOW UNIT
Edgar E. Shively, 1080 Hamlin St., Gary, Ind.
Filed April 22, 1971, Ser. No. 136,379
Int. Cl. E06b *9/00*
U.S. Cl. 109—11 **8 Claims**



A drive-in window unit embodying a frame having separate cash and merchandise compartments selectively movable into place rearwardly of a window opening.

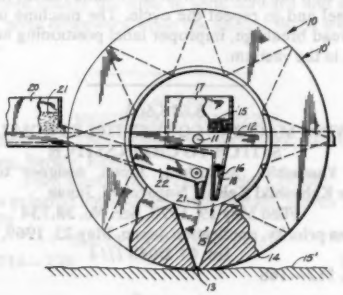
3,675,600
RECIRCULATING DRYER SYSTEM
Allen J. Jones, Fall Creek, Oreg., assignor to Michel Lumber Company, Lake Oswego, Oreg.
Continuation-in-part of Ser. Nos. 25,974, April 6, 1970, Pat. No. 3,598,067, and Ser. No. 56,447, July 20, 1970, and Ser. No. 87,806, Nov. 9, 1970. This application Jan. 21, 1971, Ser. No. 108,527
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 R **13 Claims**

Combustion gases from a waste wood fired furnace are circulated through a wood veneer dryer or lumber dry kiln and returned to a mixing chamber for exposure to the hot gases leaving the furnace, causing incineration of volatile hydrocarbons and wood fiber picked up by the gas stream in its passage over the veneer or lumber. The only exhaust from the system is located between the outlet from the high temperature mixing chamber and the gas inlet to the dryer. This arrangement insures the incineration of all combustibles before they are



vented to atmosphere or returned to the dryer so that no pollutants are discharged into the atmosphere and no potentially explosive substances are passed into the dryer.

3,675,601
SEED DISPENSING APPARATUS
Lester R. Schlievert, Rte. 2, Box 165, Curtis, Ohio
Filed Aug. 17, 1970, Ser. No. 64,307
Int. Cl. A01c *7/18*
U.S. Cl. 111—51 **1 Claim**

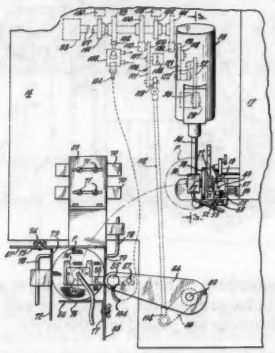


A device consisting of a wheel and hopper arrangement for properly dropping seed in an orderly spaced way. This device includes a wheel having radially spaced apart openings, the wheel being affixed to an axle on a frame of a vehicle, the frame supporting a seed hopper and a sand hopper, the sand being placed with the seed upon the soil to allow easy breakthrough of the seedlings.

3,675,602
AUTOMATIC EMBLEM SEWING APPARATUS
Angelo Pirrello, Kearny, N.J., assignor to Clinton Industries, Inc., Hackensack, N.J.
Filed June 30, 1970, Ser. No. 51,197
Int. Cl. D05b *33/00*
U.S. Cl. 112—121.29 **16 Claims**

An apparatus for automatically applying finishing stitches around the borders of emblems includes a sewing machine with an automatic needle positioner, a vacuum pickup mechanism for transferring an emblem from a stack thereof to the sewing station, and an emblem guide mechanism including a servomotor-driven feed wheel laterally spaced from the sew-

ing machine feed dog and controlled by an emblem edge sensor positioned rearwardly of the needle position. A stitch chain cutter actuated by the sewing machine trails the edge sensor and a stitch chain sensor trails the knife. A network controls the sequence of operations to raise the feed wheel and machine foot piece, transfer an emblem from the stack to the sewing station, to lower the wheel and foot piece, to start the sewing machine to advance the emblem with the last emblem attached thereto by a stitch chain and to apply stitches



thereto, to continue the sewing following the sensing of the chain for a predetermined interval to form an overlap of the stitching trailing and leading ends, the connecting chain being cut and the last emblem discharged, to raise the foot piece and speed up the wheel for a predetermined period to swing the sewn emblem from the sewing station while forming a stitch chain, to stop the machine with the needle raised, to raise the feed wheel and to repeat the cycle. The machine is disabled upon thread breakage, improper label positioning and a pressure rise in the vacuum.

3,675,603

SEWING MACHINE CONVERTIBLE FROM LOCK STITCH TO CHAIN STITCH

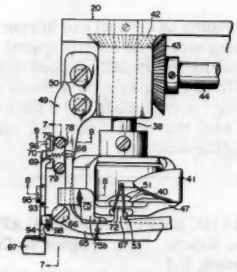
Chikao Yamashita, Aichi-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan

Filed May 19, 1970, Ser. No. 38,734

Claims priority, application Japan, May 23, 1969, 44/40464

Int. Cl. D05b *1/14*

U.S. Cl. 112—168 **7 Claims**



A lock stitch sewing machine concurrently capable of carrying out chain stitching, namely, performing lock stitching when fitted with a throat plate adapted for said stitching and chain stitching when provided with another throat plate suitable for said stitching.

3,675,604

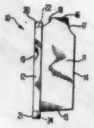
GARMENT CUTTING AND STACKING METHOD

Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.

Filed Oct. 8, 1970, Ser. No. 79,031

Int. Cl. D05b *1/00*

U.S. Cl. 112—262 **6 Claims**



A garment cutting and stacking method and apparatus for use in combination with a sewing machine where the center plait of a shirt is applied to the front panel of the shirt in the shirt making process. The center plait is positioned on the shirt panel so that its ends overlie the leading and trailing edges of the panel, and as the pieces are stitched together and moved from the sewing machine, the leading and trailing ends of the center plait are cut so that they are approximately coextensive with the leading and trailing edges of the shirt panel. A stacker is responsive to the passage of the trailing edge of the shirt panel from the sewing machine to grasp and stack the shirt panel at a position remote from the sewing machine.

3,675,605

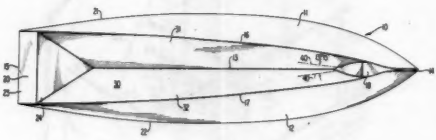
SHIP OR BOAT HULL CONSTRUCTION

Hugh S. Knerr, 9-24th Ave., Isle of Palms, S.C.

Filed July 29, 1970, Ser. No. 59,316

Int. Cl. B63b *1/10*

U.S. Cl. 114—61 **11 Claims**



A hull for ships or boats comprised of two elongated demi-hulls integrally joined together generally along the centerline of the hull whereby each of the demi-hulls has a keel disposed along the length thereof on either side of the centerline of the hull. The keels extend from a point adjacent the bow of the hull downwardly and outwardly along the length thereof to a point intermediate of the hull from where the keels extend upwardly and outwardly to a point adjacent the stern of the hull. The keels and the demi-hulls are in continual diverging orientation with respect to each other throughout substantially the length of the hull, providing the hull with a generally inverted V-shaped diverging configuration along the bottom thereof.

3,675,606

METHOD OF CONSTRUCTING MARINE FLOAT STRUCTURES

Isoe Takezawa; Masataro Muto, and Koichi Hori, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,520

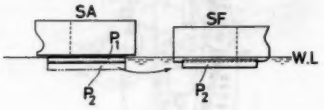
Claims priority, application Japan, June 5, 1969, 44/44198

Int. Cl. B63b *9/00*

U.S. Cl. 114—65 R **2 Claims**

A method of constructing a marine float structure, such as a large-sized ship structure, is accompolished by assembling a number of divided ship portions on a ship building base. The

first divided portion is transported on the water surface by means of a composite pontoon which is so constructed that each individual portion thereof can be separated from the other up and down or forwardly and backwardly. Then the composite pontoon is caused to sink down in the water so that said first divided portion of the ship can float of its own accord on the water surface. Subsequently the second divided portion of the ship is transported on the water surface using the same



pontoon as mentioned above. A part of the composite pontoon is separated from the remaining body and allowed to sink down in the water while said second divided portion of the ship is held by the remaining portion of the pontoon. The separated part of the pontoon is used to float said first divided portion of the ship on the water surface, thereby combining both divided portions of the ship in a single unit on the water surface.

3,675,607

METHOD AND APPARATUS FOR CONTROLLING DEPTH OF SUBMERGENCE OF AN UNDERWATER VEHICLE

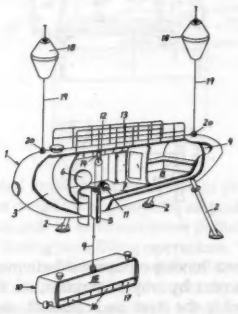
Jurgen Dorschel, Oberhausen, Germany, assignor to Deutsche Babcoak & Wilcox Aktiengesellschaft, Oberhausen, Germany

Filed Feb. 25, 1970, Ser. No. 13,900

Claims priority, application Germany, Feb. 27, 1969, P 19 09 823.8

Int. Cl. B63g *8/00*

U.S. Cl. 114—16 R **16 Claims**



A method and apparatus for controlling the depth of submergence of an underwater vehicle is described. The vehicle is formed of two separate components. A first component is a submergible main housing enclosing human life sustaining quarters in open pressure communication with a surrounding body of water. The second component is in the form of a submergible depth control body of a predetermined underwater weight. The depth control body is suspended from the house with a retractable cable. The submergible housing is provided with tanks whose air to water ratio is controlled to bring the buoyancy of the housing below the underwater weight of the depth control body. Precise depth control of the underwater housing is obtained by controlling the length of the cable. The life sustaining quarters of the vehicle are supported with material, such as fresh water or electrical storage batteries and the like, stored in a container in the second component.

3,675,608

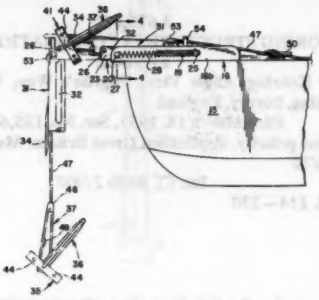
ANCHOR CARRIER AND GUIDE

James E. Webb, 13809 Hershie St., Houston, Tex.

Continuation-in-part of Ser. No. 52,261, July 7, 1970, Pat. No. 3,635,187. This application April 27, 1971, Ser. No. 137,805

Int. Cl. B63b *21/22*

U.S. Cl. 114—210 **7 Claims**



The device serves, on pulling in the anchor cable, to first register the anchor shank in a tube which, with the anchor dropped, is pivotally suspended from the forward end of a channel member which is slidably mounted in a fixed channel member on the bow of a small boat. Resilient means normally urges the slidable channel member forward. When the anchor is in fully retrieved position the said tube registers in the slidable channel and the latter is held, against the force of the resilient means, in its rearmost position by the tautened cable. Upon release of the cable, the resilient means forces the slidable channel to its extreme forward position and the momentum thereof causes the tube to slide forward and simultaneously to pivot downward while the anchor shank slides out of the tube.

3,675,609

MOORING STRUCTURE

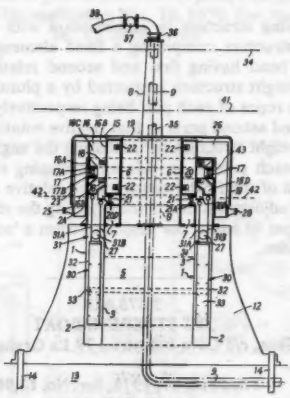
Walter Kohring, Angle View, Pilgrim's Way, West Humble, Dorking, Surrey, England

Filed March 18, 1971, Ser. No. 125,646

Claims priority, application Great Britain, March 19, 1970, 13,263/70

Int. Cl. B63b *35/00, 21/52*

U.S. Cl. 114—230 **14 Claims**



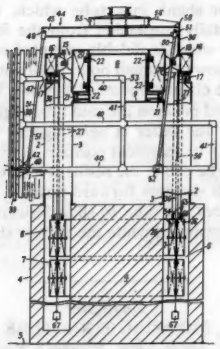
A mooring structure particularly such a structure as will allow a single vessel to be moored thereto in open water and will accommodate surging movements of the vessel. The top

of the mooring structure is covered by a downwardly opening shield which allows the structure to be totally submerged and filled with a lubricant such as oil, an oil/water interface being maintained at a level above the lower edge of the shield. A further feature comprises a weight structure resisting the surging movements, the weight structure being in the form of a vessel filled with heavy flowable material.

3,675,610
MOORING STRUCTURE IN COMBINATION WITH A FENDER

Walter Kohring, Angle View, Pilgrim's Way, West Humble, Dorking, Surrey, England

Filed March 18, 1971, Ser. No. 125,645
Claims priority, application Great Britain, March 19, 1970, 13,263/70
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 **10 Claims**



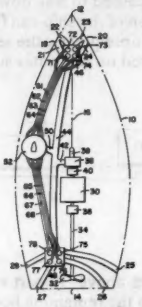
A mooring structure in combination with a fender, the mooring structure comprising a fixed element supporting a rotatable head having first and second relatively rotatable parts, a weight structure supported by a plurality of pairs of ropes, the ropes of each pair being respectively connected to the first and second parts so that relative rotation of the parts lifts the weight structure by increasing the angle between the ropes of each pair to provide an increasing restoring force, movement of the fender causing such relative rotation of the parts and adjustment means for adjusting the effective lengths of the ropes to adjust the device to form a 'soft' fender or a 'hard' fender.

3,675,611
JET STEERING BOAT

John P. Glass, c/o Cava Industries 79 La Grange Ave., Essington, Pa.

Filed Feb. 27, 1970, Ser. No. 14,985
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R **13 Claims**

A boat has a plurality of water-jet nozzles mounted at the bow and stern to assist in steering the boat especially when docking. The water-jet nozzles also provide auxiliary drive to propel the boat at slow speeds. A pump supplies water to the water-jet nozzles, and a control mechanism operates the

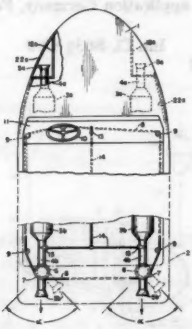


valves to move the boat forward, aft, sideways, and to rotate it clockwise and counterclockwise.

3,675,612
DRIVING, STEERING AND BRAKING SYSTEM FOR BOATS

Dieter Pfeiffer, Am braunen Berg 10, Himbach, Germany

Filed March 12, 1970, Ser. No. 19,017
Claims priority, application Germany, March 13, 1969, P 19 12 780.1
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R **5 Claims**



System for boats having compressed-air means for providing propulsive power by way of nozzles, of which swingable ones are provided in the stern and optional, stationary ones in the bow. Articulated conduit sections allow the stern nozzles to be swung about considerable angles, thereby controlling the direction of movement of the boat, while speed control may be provided through conventional throttle means which are operable independently from steering means which act upon the swinging movement of the nozzles. The nozzles in the bow can be used for braking forward movement and to provide rearward movement of the boat; they may be closed by flaps when not in use.

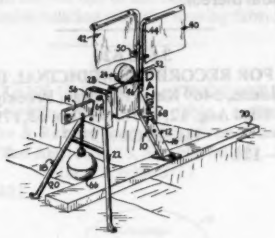
3,675,613
COLLAPSIBLE SIGNAL ASSEMBLY

Louis F. Sayles, 909 Robidoux St., St. Joseph, Mo.

Filed May 28, 1970, Ser. No. 41,221
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P **7 Claims**

A collapsible signal assembly has components removably secured to the base of the assembly in a manner to prevent

unauthorized removal of the components. The securing means for all but a "key" component are blocked from removal by



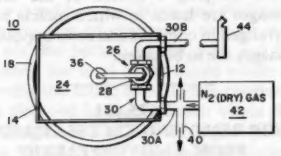
the close presence of an adjacent component, and the securing means for the "key" component is protectively covered by a lockable guard.

3,675,614

FLUID LEVEL ALARM DEVICE FOR TANKS AND THE LIKE TO MINIMIZE SPILLS OF OIL AND OTHER ENVIRONMENTAL POLLUTANTS

John T. Ward, 5707 W. Rockburn Hill, Elkridge, Md., and Allen B. Keller, 2914 Ontario Ave., Baltimore, Md.

Filed Nov. 6, 1970, Ser. No. 87,427
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 **6 Claims**



A gas operated audible alarm device is provided to signal the advent of an overflow condition in oil tanks and the like to minimize the hazards of environmental pollution from oil and chemical spills during tank filling operations. The device has a float operated pneumatic valve positioned at a predetermined upper limit of fluid level in a receiving tank, which valve controls the passage of an inert gas from a supply source to a gas operated whistle or horn. A multiplicity of such alarm devices are adapted to be actuated from a common supply header to monitor an entire field or complex of receiving tanks.

3,675,615

AUTOMATIC FLAGPOLE

Gene Stangarone, Thornton; Frank A. Cassara, Chicago, and Eugene F. Dupont, Toluca, all of Ill., assignors to Automatic Flag Poles, Inc.

Filed Dec. 1, 1970, Ser. No. 94,080
Int. Cl. G09f *17/00*
U.S. Cl. 116—173 **4 Claims**

An automatic flagpole which has a hollow interior in which the flag is stored and which has a continuous halyard and a driving mechanism for moving the halyard. The flagpole has a halyard exit at the top thereof and a lanyard entrance intermediate the length of the pole large enough to allow entrance of the flag whereby the flag may be drawn into the interior of the pole for storage, the halyard having an inboard reach interior of the pole extending from the midpoint entrance to a

sheave mechanism atop the pole so that the flag is stored interiorly of the pole above the midpoint entrance.

3,675,616

FLAG STORAGE AND DISPLAY DEVICE

George L. McInnis, 291 Brighton St., Belmont, Mass.

Filed Aug. 18, 1971, Ser. No. 172,630
Int. Cl. G09f *17/00*
U.S. Cl. 116—173 **17 Claims**

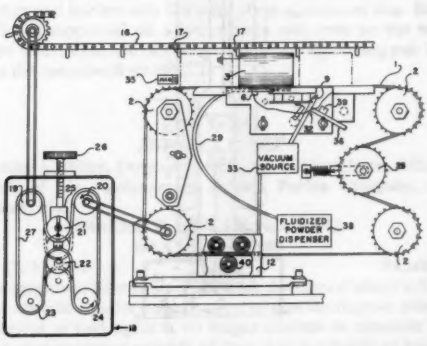
A mechanism for extending a shaft with a flag furled thereon from a stored position and unfurling the flag for display and alternatively for furling the flag and retracting the shaft to place the flag in a protected position.

3,675,617

PIGMENTED OUTSIDE SIDE STRIPER

Robert A. Winkless, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 767,582, Oct. 3, 1968, abandoned. This application Nov. 16, 1970, Ser. No. 89,922
Int. Cl. B05c *11/00*
U.S. Cl. 118—2 **20 Claims**



A device for side striping cans which uses a single belt hav-

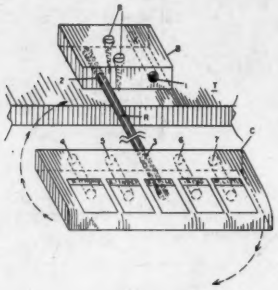
ing slots of can length along its middle. The slot gives good edge resolution to each can and avoids leakage of the side stripe material into the interior of the can.

3,675,618

FINGERPRINTING APPARATUS

Jay R. Lezak, 29149 Emery Road, Chagrin Falls, Ohio

Filed Jan. 20, 1972, Ser. No. 181,101
Int. Cl. B41k 1/00
U.S. Cl. 118—31.5 1 Claim



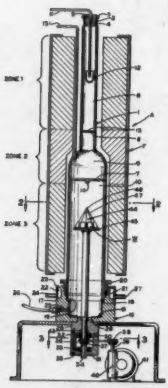
Finger printing apparatus includes a square block has two holes, one of which goes completely through the block, the other hole only part way. A metal rod, which is inserted into the center back edge of a fingerprint card-holder. The block is affixed to a table top used for fingerprinting. When the card-holder, with the rod is placed into the short hole in the block, it permits the card-holder to rotate. This rotation then allows the card-holder to roll around the finger in the taking of fingerprints, instead of rolling the finger in a half circle to get a complete set of prints. The other hole in the block allows the card-holder to be used in a fixed position without any rotation, if desired.

3,675,619

APPARATUS FOR PRODUCTION OF EPITAXIAL FILMS

John W. Burd, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 602,242, Dec. 16, 1966, Pat. No. 3,511,723. This application Feb. 25, 1969, Ser. No. 813,374
Int. Cl. C23c 11/00
U.S. Cl. 118—48 3 Claims



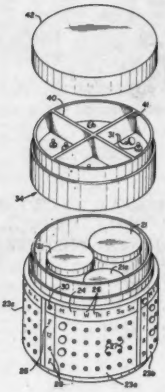
A vertically extending reaction system has seriatim, reaction, mixing and deposition chambers. The substrate support forms the bottom wall of the deposition chamber, is rotating, pyramidal in form and includes a flange extending laterally from the bottom thereof.

3,675,620

MEANS FOR RECORDING MEDICINAL DOSAGES

Michel M. Baustin, 5469 Kings Highway, Brooklyn, N.Y.

Filed Aug. 12, 1970, Ser. No. 63,179
Int. Cl. G09f 9/00
U.S. Cl. 116—121 6 Claims



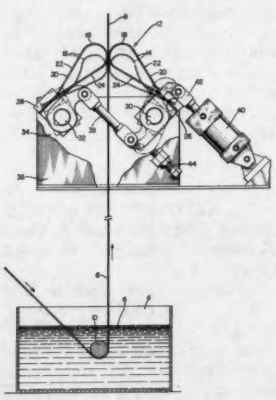
A means for keeping a record of the times at which medicinal dosages are taken in which indicia to record such dosage are arranged in columns and rows opposite the times at which the dosages are to be taken.

3,675,621

DEVICE FOR REMOVING EXCESS LIQUID COATING FROM A MOVING FABRIC

Theodore F. Griffin, Barberton, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 24, 1970, Ser. No. 58,029
Int. Cl. B05c 11/04
U.S. Cl. 118—122 17 Claims



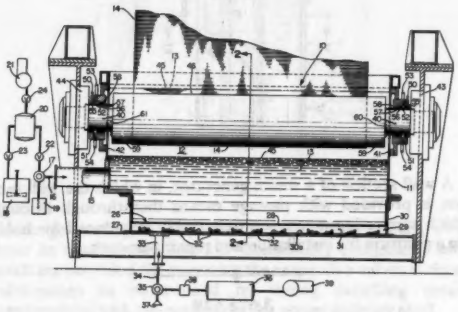
A pair of specially configured scraper blades mounted for

rotating into and out of compressive wiping engagement with a fabric, previously dipped in a liquid coating, to remove excess liquid from the fabric. An air cylinder, or spring, is utilized to maintain curved lips of the scraper blades in predetermined compressive relation with the moving fabric.

3,675,622
DIP TANK USED IN COATING FABRIC

Theodore F. Griffin, Barberton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 3, 1970, Ser. No. 60,481
Int. Cl. B05c *3/12*
U.S. Cl. 118—421 **20 Claims**

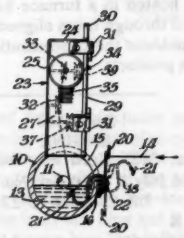


A dip tank for holding liquid adhesive used for increasing the adhesion or bond between fabric and rubberized material used in the production of pneumatic tires. A rubber bag is secured adjacent the bottom of the tank and inflated and deflated to control the level of the liquid within the tank. A roller for directing the fabric into dipping relation with liquid in the tank, is disposed in fixed relation within the tank and journalled for rotation in a pair of bearings disposed in sealed relation outside the tank, such that the liquid cannot seep into the bearings and eventually wear them out or destroy them to hamper rotation of the roller.

3,675,623
YARN HANDLING APPARATUS

Lewis A. Taylor, Wilmington, Del., assignor to Enterprise Machine and Development Corp.

Filed March 11, 1970, Ser. No. 18,510
Int. Cl. B05c *3/00*
U.S. Cl. 118—423 **10 Claims**

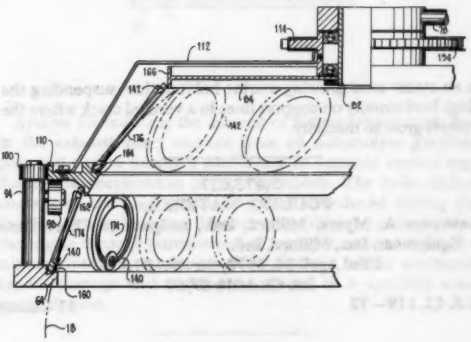


Apparatus is provided for handling yarns to be bulked by taking them from a treating area, such as a liquid reservoir, passing them into a housing means that contains at least one guide that is positioned so that any material thrown off the traveling yarn is not thrown toward or onto the oncoming yarn, the yarn so removed of material then being passed into a jet for bulking, the inlet end of the jet being in conduit relationship with the housing means and the separated material being conducted back to the reservoir, the housing means being in conduit relationship with the reservoir. In one embodiment, there is located on a wall of the housing a screen which breaks streams of liquid directed against it into small droplets, reducing spray.

3,675,624
APPARATUS FOR ROTATING WORK FOR THIN FILM DEPOSITION

Barney D. Hunts, Los Altos Hills, and William O. Lyon, Sunnyvale, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,532
Int. Cl. B05c *11/14*
U.S. Cl. 118—503 **4 Claims**



Each carrier in a plurality of tiers of hoop-like carriers for individual silicon wafers is rotated about its own translating axis as the carrier is orbited about a central source of evaporant material. Carrier support means includes at least a three track system. The tracks are vertically spaced from one another and horizontally disposed about a common axis. Each carrier is supported on a lower track and rests on the next upper track. Rotation of either track of a cooperating pair imparts the compound motion.

3,675,625
ANIMAL LITTER

Timothy A. Miller, Ferguson, and Larry R. Hanselman, Affton, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed July 9, 1970, Ser. No. 53,642
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **9 Claims**

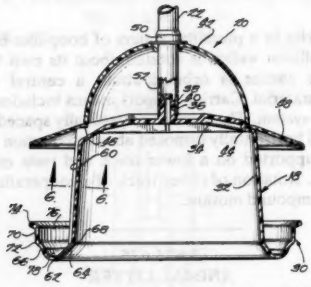
An improved animal litter has been developed which selectively adsorbs an odor control agent so that the fragrant pleasing aroma of said agent is no longer obvious or apparent or lost during extended periods of time, but is capable of being selectively deadsorbed by the presence of moisture, as in urine or fecal material and released to mask any offensive odors.

3,675,626
METHOD FOR GROWING OYSTERS
Russell J. Down, Holmes Landing Road, Cape May Court House, Cape May County, N.J.
Filed June 9, 1970, Ser. No. 44,776
Int. Cl. A01k 61/00
U.S. Cl. 119—4 1 Claim

A method of growing oysters on annular rings by first placing and vertically suspending the rings on a horizontal support

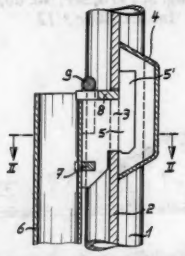
in an oyster seed growing marine habitat, than suspending the rings horizontally on support lines in a vertical stack where the oysters grow to maturity.

3,675,627
POULTRY WATERER
Lawrence A. Myers, Milford, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.
Filed April 24, 1970, Ser. No. 31,486
Int. Cl. A01k 07/00
U.S. Cl. 119—72 11 Claims



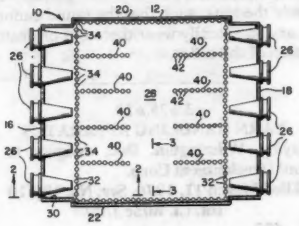
A poultry waterer having a main body member providing an annular trough and adapted to be hung from a centrally located water supply pipe, the body member including channel means for directing water from the pipe to the trough, and a hood member disposed over the body member for preventing roosting of the birds on the waterer and dust or dirt collection in the water.

3,675,628
WALL ELEMENTS FOR STEAM GENERATORS
Rudolf Seibold, Gummersbach, Germany, assignor to L. & C. Steinmuller, G.m.b.H., Gummersbach, Germany
Filed Oct. 15, 1970, Ser. No. 81,045
Claims priority, application Germany, Oct. 16, 1969, P 19 52 140.5
Int. Cl. F22b 37/24
U.S. Cl. 122—6 R 12 Claims



A wall section of a steam generator, in which the wall section is provided with passage means therethrough through which supporting means are detachably introduced for holding a platform for installation and repair purposes.

3,675,629
MINIMIZATION OF NITROGEN OXIDES IN COMBUSTION PRODUCTS
William D. Stevens, North Caldwell, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Sept. 28, 1970, Ser. No. 76,111
Int. Cl. F22b 21/00
U.S. Cl. 122—235 R 8 Claims

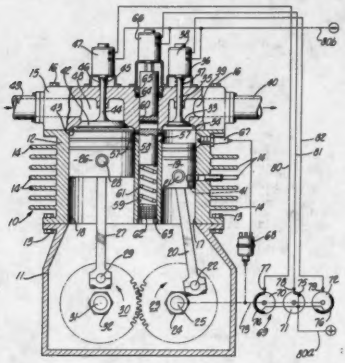


Fluid which is heated in a furnace having several rows of burners is directed through tubes aligned in rows between the burner rows to minimize the concentration of nitrogen oxides in the combustion products.

3,675,630
ENGINE
Cleo C. Stratton, 2123 Kern St., San Bernardino, Calif.
Filed July 2, 1970, Ser. No. 51,820
Int. Cl. F02b 13/22
U.S. Cl. 123—70 R 4 Claims

An internal combustion engine in which a power generating cylinder has a piston drivingly coupled with a piston in a combustible fluid compressing cylinder by means of gears connected with a power delivery shaft and which are adjustable to vary the timed operating relationship at which the pistons reach their respective dead center positions, the compressing

cylinder having a valve controlled inlet for a combustible fluid which is precompressed therein and delivered through an interconnecting valve controlled passage to the power generating cylinder into the space above the piston therein where it is confined under pressure and ignited after the piston in the



power generating cylinder has passed and is moving away from its dead center position. Electrically energizable solenoids are provided for operating the respective valves in timed relationship as determined by timing switching means synchronized with the rotation of the power delivery shaft.

3,675,631

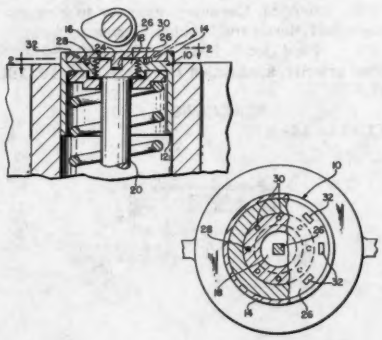
ADJUSTABLE CAM FOLLOWER

William J. Hixson, 4220 N.E. 90th St., Seattle, Wash.

Filed June 3, 1970, Ser. No. 43,037

Int. Cl. F01l *1/20*; F16h *53/06*

U.S. Cl. 123—90.52 **6 Claims**



A preferred form of follower includes an inverted cup-shaped body that fits over a valve stem of an overhead cam engine and includes a threaded central bore which receives a threaded plug. The bottom surface of the plug engages the valve stem and the top of the plug is provided with a square bore. A cap fits over the body and plug and is provided with a downwardly depending square boss that is fitted into the bore of the plug. The cap is provided with slots engageable by a screwdriver to rotate the cap and thus screw the plug axially inward or outward of the body to adjust the clearance between the cam and the valve stem. A plurality of circumferentially spaced locking holes are provided to be selectively engaged by a pin depending downwardly from the cap. A second form of the invention includes an inverted cup-shaped body having an upwardly extending threaded boss. A cap overlies the body and is provided with a mating threaded bore. A recess is provided in the cap for rotating the cap and providing access to a set screw inserted through the cap for locking engagement with the threaded boss.

3,675,632

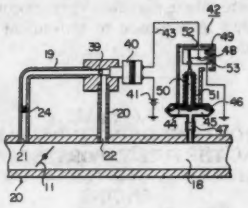
INTAKE MANIFOLD VACUUM CONTROL SYSTEM

Yasuo Nakajima, Yokosuka, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Continuation of Ser. No. 808,259, March 18, 1969, abandoned. This application April 2, 1971, Ser. No. 130,835

Int. Cl. Fo2m *7/12*; F02d *9/00*

U.S. Cl. 123—97 B **3 Claims**



System for reducing the amount of hydrocarbons contained in the exhaust gases emitted from an automotive gasoline-powered engine having a carburetor of variable venturi type during the deceleration of the automobile. The hydrocarbon content of the engine exhaust gases is reduced during the deceleration by lowering the vacuum at the intake manifold of the engine through introduction of a proper amount of air-fuel mixture into the intake manifold by way of an additional bypass passage and under the control of a specially constructed valve.

3,675,633

AIR-POLLUTION PREVENTIVE SYSTEM FOR MOTOR VEHICLES

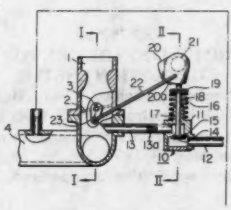
Yasuo Nakajima, Yokosuka, and Yoshimasa Hayashi, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 13, 1970, Ser. No. 2,572

Claims priority, application Japan, Jan. 20, 1969, 44/3497; March 22, 1969, 44/21281

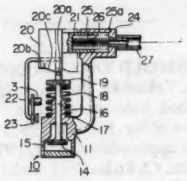
Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **3 Claims**



An air-pollution preventive system for use with motor vehicle internal combustion engines for effectively reducing the concentration of nitrogen oxides in the exhaust gases emitted from the engines during the city-road driving of the motor vehicle comprises means for recirculating the exhaust gases

from the exhaust manifold into the intake manifold only when the vacuum in the intake manifold is lower than a predetermined lever concurrently with the throttle valve of the carburetor being within a predetermined range of open positions. The means for recirculating the exhaust gases comprises a



recirculating passage, a valve for opening and closing the passage, and a double-action cam which is both axially movable in response to intake manifold vacuum conditions and angularly displaced in response to movement of the throttle valve to open the valve.

3,675,634

DEVICE FOR CONTAINING AND SUBSEQUENTLY CONSUMING THE FUEL VAPORS ESCAPING TO THE ATMOSPHERE FOR AN INTERNAL COMBUSTION ENGINE

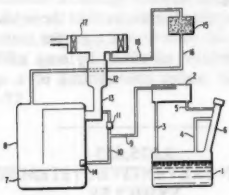
Yasuo Tatsutomi, Hiroshima, and Tetsuo Noma, Kure, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Sept. 24, 1970, Ser. No. 75,062

Claims priority, application Japan, Sept. 24, 1969, 44/76502

Int. Cl. F02m *59/00*

U.S. Cl. 123—136 **3 Claims**



A system for containing and subsequently consuming the fuel vapors escaping to the atmosphere from an internal combustion engine in which a vapor tube of a condense tank connected to a fuel tank is connected to a connection tube connecting the crankcase to an inlet manifold, and having a valve which opens only during engine operation. A canister is connected between the crankcase and an air cleaner.

3,675,635

ELECTRONIC IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

Toni Graser, Sonnenhofstrasse, 8340 Hinwil/Zurich, and Joseph Hirs, 164, Usterstrasse, 8621 Wetz.kon/Zurich, both of Switzerland, assignors to said Graser, by said Hirs

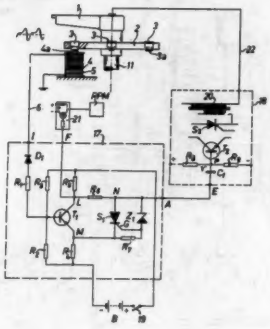
Filed May 18, 1970, Ser. No. 38,340

Claims priority, application Switzerland, May 21, 1969, 7869/69

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **13 Claims**

An electronic ignition device for internal combustion engines comprises an ignition distributor having a distributor arm and an ignition circuit connected on the output side with the contact of the distributor arm. The ignition circuit is controlled without contacts by a magnetic pick-up having a rotating armature fixed for rotation with the distributor arm. The armature is formed by a disk carrying a number of permanent magnets corresponding to the number of permanent magnets corresponding to the number of cylinders of the internal combustion engine, the magnets being equally spaced in circumferential direction and disposed at the same radial distance from the axis of rotation of the disk. An induction coil with a



soft iron core is disposed at one side of said disk. Upon rotation of the disk with the permanent magnets the exposed pole faces on said side of the disk pass across the end face of the soft iron core. This disposition allows the magnetic pick-up to be mounted within the usual ignition casing equipped with a conventional mechanical interrupter of existing internal combustion engines.

3,675,636

IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

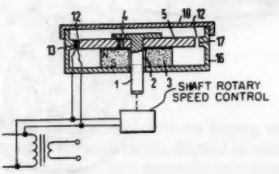
Paul Hini, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 9, 1969, Ser. No. 883,456

Claims priority, application Germany, Dec. 10, 1968, P 18 13 591.6

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **9 Claims**

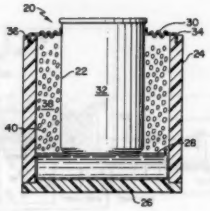


Ignition device for an internal combustion engine having a spark gap ignitable by the secondary voltage of a transformer in accordance with mechanically controlled, brief variations in the primary voltage of the transformer includes a magnetic field-dependent resistance connectible to the primary coil of the transformer, permanent magnet means displaceable relative to the resistance, and yoke means comprising a circuit for magnetic flux from the permanent magnet means, the circuit being continuously maintainable irrespective of the displaced position of the permanent magnet means, the resistance being intermittently connectible in the circuit in the course of displacement of the permanent magnet means.

3,675,637
HEAT EXCHANGE CONTAINER

Cebern B. Trimble, 1100 Westridge Road, Dayton, Ohio

Filed July 28, 1970, Ser. No. 58,886
Int. Cl. F24j *1/00*
U.S. Cl. 126—263 4 Claims

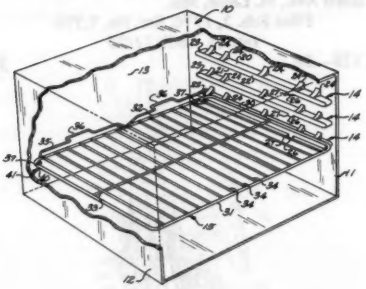


A heat exchange container for use in effecting a temperature change in consumable products is disclosed. Inner and outer containers are connected at one end by a flexible member and define chambers for separating the consumable products from the reaction chamber. The heat exchange occurs through the interaction of a solid chemical mixture and a liquid chemical. The liquid chemical is separated from the solid chemical by an independent container secured within the outer container.

3,675,638
RUNNER CONSTRUCTION FOR OVEN RACK

Albert L. Baltz, Millstadt, and Elmer E. Voeke, Belleville, both of Ill., assignors to Eagle Range and Manufacturing Company, Belleville, Ill.

Filed Dec. 7, 1970, Ser. No. 95,730
Int. Cl. F24c *15/16*
U.S. Cl. 126—339 1 Claim



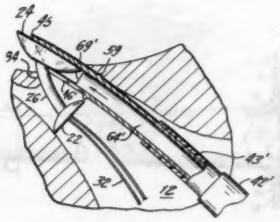
This rack and runner construction includes opposed runners attached to the sidewall of an oven compartment and having inclined bearing glides spaced along their length, each pair of horizontal runners receiving a rack in sliding engagement. Each rack includes rear guide elements cooperating with associated horizontal runners to limit upward and outward movement of the rack.

3,675,639
DEVICE FOR AND METHOD OF TEMPORARY STERILIZING A FEMALE

Hugo S. Cimber, 22 Seven Gables Road, Staten Island, N.Y.

Filed May 11, 1970, Ser. No. 35,995
Int. Cl. A61f *5/46;* A61b *19/00, 17/34*
U.S. Cl. 128—1 23 Claims

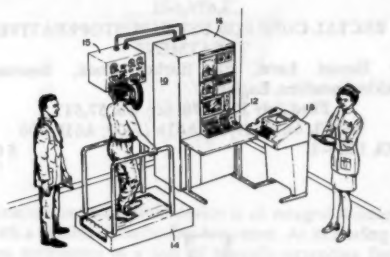
A female is temporarily sterilized by blocking the entrance to the uterus at the oviduct exit by means of a plug comprising (a) a blocking plate, which blocks the uterus entrance, (b) a plug positioning plate, which is passed through the wall of the uterus and (C) a stem which joins the blocking and positioning plates. For emplacing the plug, the shaft which carries the plug to its blocking position has a cutting blade at its forward end which cuts an opening through the wall of the uterus through which the positioning plate of the plug is then passed. The plug is then ejected from the support rod, which is thereafter withdrawn. Dye may be pumped into the uterus to facilitate observation of the process.



3,675,640
METHOD AND APPARATUS FOR DYNAMIC HEALTH TESTING EVALUATION AND TREATMENT

James D. Gatts, 4625 E. Louisiana, Apt. 201, Denver, Colo.

Filed April 9, 1970, Ser. No. 26,817
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R 11 Claims

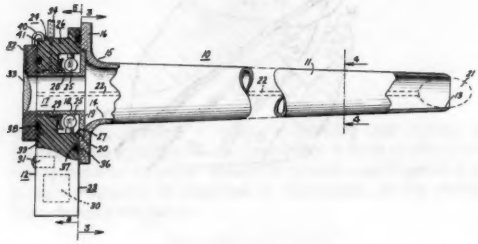


Method and apparatus for a dynamic health testing, evaluation and treatment comprising the recordation of test data from large numbers of individuals to establish dynamic physical performance norms for patients of many varied types. Historical data is taken from a patient which, in conjunction with a physical examination, is used to establish a specific theoretical dynamic physical performance norm for that particular patient and the recommended loading for the dynamic health testing machine. The patient is placed on the exercise machine which is under a programmed load based upon the basic data and numerous parameters of the patient's state of health are monitored under dynamic conditions. The monitored information is continuously fed back to correct the programmed load to protect the patient against overstress. The patient's performance is then compared with his own theoretical norm and treatment is recommended consistent with the patient's age and health which would lead toward the achievement of the dynamic physical performance norm.

3,675,641
SPECULUM INSTRUMENT AND ISOLATED LIGHT MEANS THEREFOR

John M. Fiore, Troy, N.Y., assignor to Bio-Analytical Laboratories, Inc.

Filed Nov. 21, 1969, Ser. No. 878,655
Int. Cl. A61b 1/06
U.S. Cl. 128—6 13 Claims

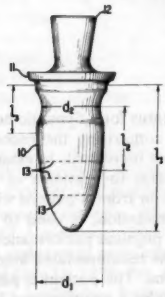


A speculum instrument with improved lighting means therefore is disclosed wherein the speculum barrel, which may be a single use disposable material, tapers to become increasingly larger at its proximal end. A smaller cylindrical sleeve member having a light transmitting flange or wall at one end, has the flange affixed into the larger proximal end of the barrel with the sleeve extending therefrom, to define an annular contamination isolated area with the flange directed towards the distal end of the barrel. A handle member containing a light source releasably engages the speculum barrel and provides lamp means in the isolated area to direct light through the barrel. An obturator in the barrel may be withdrawn through the sleeve.

3,675,642
RECTAL CONE FOR USE IN POSTOPERATIVE TREATMENT

Peter Herent Lord, 38 Burkes Road, Beaconsfield, Buckinghamshire, England

Filed July 23, 1970, Ser. No. 57,517
Int. Cl. A61m 29/00; A61b 17/00; A61f 5/00
U.S. Cl. 128—1 5 Claims

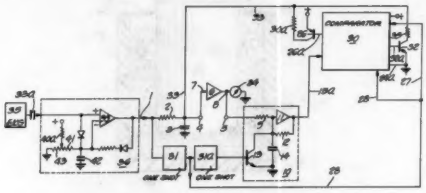


A rectal cone is disclosed which is used in postoperative treatment following a marked enlargement of the anal canal during the operative procedure and which presents a peripheral surface having critical characteristics of configuration and dimension for accomplishing physiological benefits and convalescence with minimum discomfort.

3,675,643
CARDIAC TACHOMETER

Horst Funfstuck, and Shmuel Elazar, both of Camarillo, Calif., assignors to Statham Instruments, Inc., Oxnard, Calif.

Filed Sept. 4, 1970, Ser. No. 69,796
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 F 6 Claims

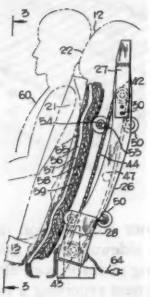


This application relates to means for measuring and recording the frequency of repetitive events which may be subject to large changes in frequency, and is particularly useful in connection with the measuring and recording of heartbeats. This is accomplished by generating a train of pulses responsive to events of interest, establishing a dc potential responsive to the frequency of said train of pulses, generating a linear sawtooth pulse whose amplitude is responsive to the frequency of the applied pulses and to said dc potential, comparing said amplitude of said sawtooth pulses with a reference voltage, and modifying said dc potential responsive to the difference between said reference voltage and said sawtooth pulse amplitude, and providing means responsive to the magnitude of said dc potential to indicate the frequency of the pulses of interest.

3,675,644
MASSAGE APPARATUS

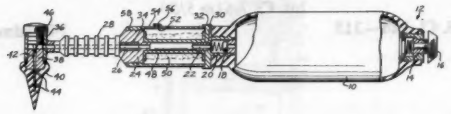
Joseph F. Laskowitz, c/o Con-Vex-O Chair & Lounge Co., Inc. 2634 Hord Ave., St. Louis, Mo.

Filed Feb. 2, 1970, Ser. No. 7,770
Int. Cl. A61h 1/00
U.S. Cl. 128—58 3 Claims



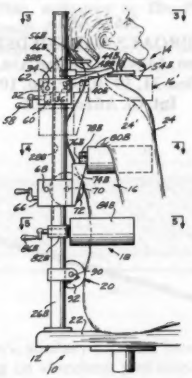
A massaging apparatus is housed in a chair and includes a frame having side members, to each of which are mounted upper and lower rotatable sprockets. A pair of endless chains are mounted for rotation about associated upper and lower sprockets, and a plurality of transverse shafts, carrying massaging rollers, extend between the chains. The shafts, which are attached to each chain by means of adaptor links, orbit continuously with the chains. The chair housing the apparatus provides a body support, engaged by the massaging rollers, and a removable pillow permits the thickness of the body support to be varied during massaging and non-massaging use of the chair.

3,675,645
DENTAL HYGIENE DEVICE
David Samiran, 148 Northwest Road, Westfield, Mass.; Robert O. Cooling, 15 White Oaks Drive, Longmeadow, Mass., and Melvin G. Fitch, 29 Mary Lyon Drive, South Hadley, Mass.
Filed May 25, 1970, Ser. No. 40,223
Int. Cl. A61h 7/00
U.S. Cl. 128—62 A 2 Claims



A device for use in oral and dental hygiene, wherein a tooth engaging element in the form of a bristle brush, or rubber-like member, is mounted on a hand graspable holder and the holder is arranged to supply fluid under pressure to the tooth engaging element, either from a pressurized source or by means of a manually operable bulb in fluid communication with the tooth engaging element. The specification also discloses an arrangement whereby the tooth engaging element can be rotated if so desired.

3,675,646
TRACTION CRADLE APPLIANCE
Joseph D. Corcoran, 33 Farmstead Lane, Brookville, N.Y.
Continuation-in-part of Ser. No. 771,261, Nov. 20, 1968, Pat. No. 3,596,655. This application Aug. 31, 1970, Ser. No. 68,121
Int. Cl. A61h 1/02
U.S. Cl. 128—75 2 Claims

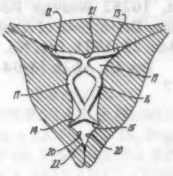


Traction cradle appliance for the extension of traction of the cervical-upper-dorsal area of the spine. A cradle in which the head may rest is provided. Means are further provided for applying pressure to the occipital area and to both sides of the jaw area. Shoulder restraining means for maintaining stability of the shoulders while upward pressure is exerted on the jaw-occipital area.

3,675,647
INTRAUTERINE CONTRACEPTIVE DEVICE
Bruce B. Pharriss, Cupertino, and Max Anliker, Portola Valley, both of Calif., assignors to Alza Corporation
Filed Aug. 5, 1970, Ser. No. 61,141
Int. Cl. A61f 5/46
U.S. Cl. 128—130 8 Claims

Intrauterine contraceptive device is an integral filamentary body with a substantially sinusoidal flexible stem. At its leading end, the stem terminates in a pair of laterally extending flexible arms and, at its trailing end, terminates in a pair of laterally and axially rearwardly extending relatively inflexible arms, shorter in length than the arms at the leading end. Trailing arms serve to anchor the device relative to the cervix while the leading arms, as well as the stem, are free to conform to changes in position caused by muscular contractions of the uterus.

3,675,648
INTRAUTERINE CONTRACEPTIVE DEVICE
Bruce B. Pharriss, Cupertino, and Max Anliker, Portola Valley, both of Calif., assignors to Alza Corporation
Filed Aug. 5, 1970, Ser. No. 61,069
Int. Cl. A61f 5/46
U.S. Cl. 128—130 8 Claims

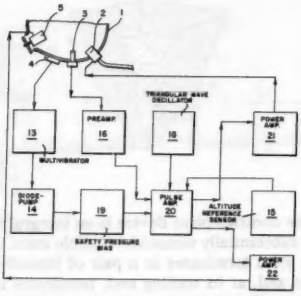


Intrauterine contraceptive device is an integral filamentary body with a flexible closed ovoid loop stem. At its leading end, the stem terminates in a pair of laterally extending flexible arms and, at its trailing end, terminates in a pair of laterally and axially rearwardly extending relatively inflexible arms, shorter in length than the arms at the leading end. Trailing arms serve to anchor the device relative to the cervix while the leading arms, as well as the stem, are free to conform to changes in position caused by muscular contractions of the uterus.

3,675,649
ELECTRONICALLY CONTROLLED OXYGEN REGULATORS
Edgar William James Basham, Dowencourt, and Kenneth Wilfrid Tizard, Wokingham, both of England, assignors to Westland Aircraft Limited, Yeovil, England
Continuation-in-part of Ser. No. 586,171, Oct. 12, 1966, abandoned. This application Aug. 21, 1970, Ser. No. 65,962
Int. Cl. A62b 7/02
U.S. Cl. 128—142 R 9 Claims

A regulator apparatus for breathable gas includes an oxygen supply valve and an expiratory/air inlet valve mounted in the

wall of a mask or other breathing chamber. A differential pressure sensor and an oxygen partial pressure sensor are also mounted on the mask and generate electrical signals in accordance with conditions in the mask. The differential pressure signal, which varies with the breathing of the user, is passed, along with the variable partial pressure signal, into an electronic control circuit which controls the operation of the valves in accordance with the breathing cycle and the oxygen



partial pressure so as to maintain proper breathable gas conditions in the mask. When less than 100 percent oxygen supply is needed, the expiratory/air inlet valve and the oxygen valve are opened for appropriate relative time intervals during an inspiration so as to pass oxygen and diluting air into the mask in appropriate ratios. Altitude responsive elements are incorporated to bias the control circuit appropriately in accordance with increasing altitude, this biasing, of course, resulting in modification of the operation of the valves.

3,675,650

DIVING HELMET

Frank F. Domyan, 4648 Camellia Ave., Studio City, Calif.; Joseph C. Lantz, 10252 Bouvais Road, and Richard D. Sibley, 10631 Larry Drive, both of Anaheim, Calif.

Filed Jan. 25, 1971, Ser. No. 109,331

Int. Cl. A62b *18/04*

U.S. Cl. 128—142.7 **7 Claims**

A diving helmet includes a cylindrical portion with a dome shaped top for the head and neck of a user. An air line is attached to a fitting adjacent the dome shaped top and to one side and rear thereof while a slight glass is held in a protrusion extending forwardly from the cylindrical portion. The cylindrical portion terminates in a rim designed to fit over the shoulders, front chest and rear torso of the user, and the rim is weighted with lead weights. The cylindrical portion dome and rim are preferably formed of fiberglass and in the rim the fiberglass completely surrounds the lead. On the under side of the rim on each side thereof there is attached as by gluing flexible pockets consisting of water inpenetrateable leaves stitched together so that one leaf will remain glued to the bottom of the rim while the other leaf is free to open under the pressure of air within the helmet when it is not in use but to close against the other leaf when contacted by the shoulders of a user. The leaves increase the volume of air within the helmet when not in use to provide floatation, but the volume is decreased when in use so that the helmet will remain in place without the necessity of straps.

3,675,651

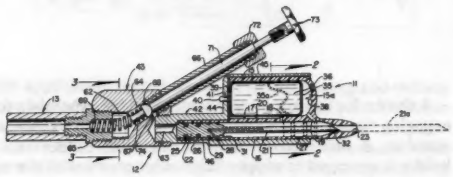
FLUID-POWERED APPLICATOR FOR MEDICAMENTS

Louis C. Meyer, Box 434 Rte. 01, Morrison, Colo.

Filed Feb. 25, 1970, Ser. No. 14,027

Int. Cl. A61m *5/00*

U.S. Cl. 128—215 **14 Claims**



A power-actuated medicament applicator device includes a pressure cylinder and an injection needle or like applicator tool with a piston portion worked by pressure in the cylinder to drive the needle into the skin and then force a quantity of medicament carried in an accompanying container through the piston. The piston is carried in a normally retracted position in the cylinder and will extend through a restricted opening in an end wall thereof. The container for the medicament is located adjacent the cylinder and is carried in a rupturable ampule made of a flexible material. Flow passages between the pressure cylinder and container are arranged so that once the piston has moved to its extended position the container is pressurized to compress the ampule and medicament is forced from the container and through the needle or other applicator tool.

3,675,652

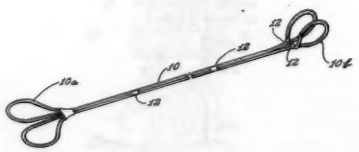
THROAT SWAB HOLDER

Taylor L. McPherson, 44043 N. Heaton Ave., Lancaster, Calif.

Filed Dec. 31, 1970, Ser. No. 103,038

Int. Cl. A61m *35/00*

U.S. Cl. 128—269 **6 Claims**



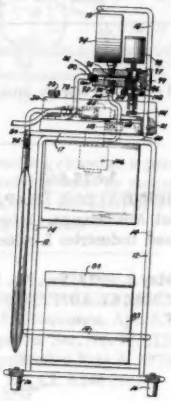
An improved throat swab holder for use by an attendant or by the patient himself, and which is capable of removably supporting a wad of absorbent cotton, or the like, the absorbent cotton being saturated with an appropriate medicament. THe swab holder of the invention is constructed to have a shape appropriate for its easy insertion into the throat of the patient, and to have no sharp ends or edges. The swab holder is formed of a continuous wire which is looped at one end to form a handle or finger grip, and which is looped at the other end to form a means for holding a wad of absorbent cotton, or the like, in a locked position.

3,675,653

WOUND DRAINAGE EQUIPMENT

Charles L. Crowley, Hatboro; James R. Grosholz, Strafford, both of Pa., and Charles G. Hutter, III, Colorado Springs, Colo., assignors to Air-Shields, Inc., Hatboro, Pa.

Filed Aug. 15, 1969, Ser. No. 850,440
Int. Cl. A61m 1/00
U.S. Cl. 128—278 7 Claims



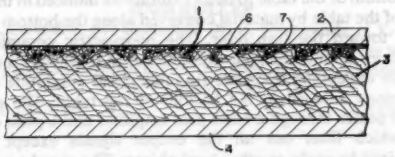
Pump provides for disposable drainage of body fluids by means of peristaltic action. Separate drainage kit comprises bag for collection of fluids. Tube leading from bag to catheter has a collapsible wall section having sufficient resilience so that periodic collapsing by rotatable pump element creates sufficient negative pressure within the tube to pump fluids to the bag. Slot loading and unloading of the tube is provided.

3,675,654

DISPOSABLE ARTICLE WITH MOSITURE-ACTUATED INDICATING AGENT

Joseph S. Baker; Mario S. Marsan, and Robert C. Duncan, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed April 1, 1970, Ser. No. 24,573
Int. Cl. A61f 13/16
U.S. Cl. 128—287 7 Claims



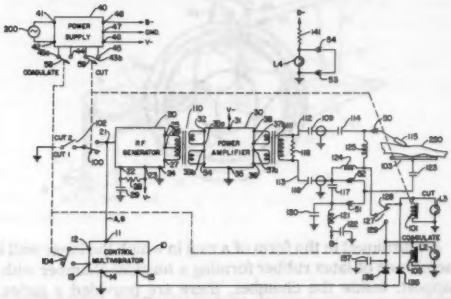
Disposable diapers, sanitary napkins, bandages and the like articles, comprising an absorbent pad disposed on a translucent back sheet of water impervious material are provided with a moisture-actuated indicating agent therebetween. The indicating agent comprises either a small amount of finely divided water-soluble dye having a high dye strength or such a due admixed with a finely divided diluent masking agent, such as talcum powder. The indicating agent is dry and adheres to the pad surface facing the back sheet and the back sheet surface facing the pad by mechanical and electrostatic action. When the absorbent pad of the disposable article and the indicating agent become wet in use the resulting due solution between the pad and sheet is visible through the translucent back sheet to provide indication of wetness.

3,675,655

METHOD AND APPARATUS FOR HIGH FREQUENCY ELECTRIC SURGERY

Weldon Rex Sittner, Westport, Conn., assignor to Electro Medical Systems, Inc., Englewood, Colo.

Filed Feb. 4, 1970, Ser. No. 8,549
Int. Cl. A61b 17/36; A61n 3/00
U.S. Cl. 128—303.14 11 Claims



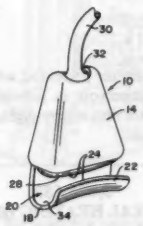
A method and apparatus for electric surgery includes generating oscillations of high frequency electric energy of substantially constant amplitude, controlling the duration of and spacing in time between each series of oscillations generated and applying the generated energy through an electrode for the purpose of making surgical incisions and coagulating blood at the point of incision. A common generator serves as a source of the electric energy for different surgical procedures, the duration and spacing between each series of oscillations being closely controlled according to their intended application and in such a way as to minimize power requirements and the possible hazards of use either to the doctor or to the patient.

3,675,656

FLUID OPERATABLE HEMOSTAT

Salomon Hakim, Carrera 13, No. 48-26, Bogota, Colombia

Filed May 26, 1969, Ser. No. 827,859
Int. Cl. A61b 17/12, 17/00
U.S. Cl. 128—325 2 Claims



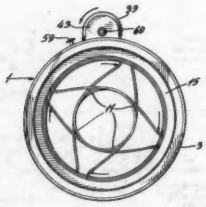
A quickly attached and operated hemostat for controllably occluding a blood vessel comprises an inflatable bladder mounted in or on a housing which includes a rigid open channeled jaw against which the bladder may be expanded. The jaw is of a configuration preferably saddle shaped, rendering it openly receptive to a blood vessel.

3,675,657

TOURNIQUET

Oscar Gauthier, Ville Brossard, Province of Quebec, Canada, assignor to Clebel Inc., L'Ange-Gardien, Co. Rouville, Queen, Canada

Filed July 14, 1969, Ser. No. 841,445
Int. Cl. A61b 17/12; A61f 5/42
U.S. Cl. 128—327 6 Claims



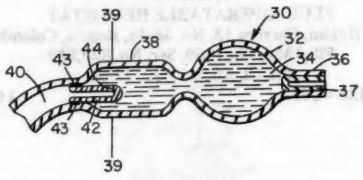
A tourniquet in the form of a ring in which the inner wall is a membrane of latex rubber forming a toroidal chamber with its support. Inside the chamber, there are provided a series of strings, each having one end secured to the support of the ring while the other end is secured to a toothed annular member inside the chamber. A pinion operable from outside the ring, is in mesh with this toothed member so that when rotated in one direction, the strings act on the inner rubber wall to expand it inwardly and thus close the ring opening.

3,675,658

CATHETER WITH VALVED FLUID RESERVOIR

Glenn N. Taylor, Barrington, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation-in-part of Ser. No. 767,296, June 14, 1968. This application Sept. 3, 1970, Ser. No. 69,343
Int. Cl. A61m 25/00
U.S. Cl. 128—349 BV 2 Claims



In a self-inflating catheter provided with a reservoir of fluid under pressure, the reservoir is provided with internal slit valves, opening by distortion under digital pressure, to control the flow of inflating fluid.

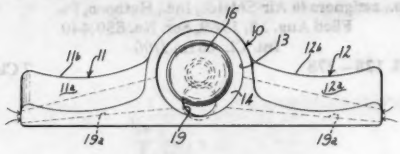
3,675,659

PERINEAL HEATING DEVICE

Gilder L. Wideman, Birmingham, Ala., assignor to Don Green; Bruce L. Gordon and L. Clark Gravlee, Birmingham, Ala.

Filed March 10, 1971, Ser. No. 122,824
Int. Cl. A61n
U.S. Cl. 128—395 6 Claims

A perineal heating device embodying a centrally disposed, open ended generally cylindrical portion carrying the heat source, such as an incandescent lamp. Leg rests or lateral wings extend outwardly from the central portion and are formed integrally therewith. An opening may be provided through the rear wall of the cylindrical portion or through the lateral wings so that air is thermally induced through the opening or openings and exists forwardly into contact with the patient's body.

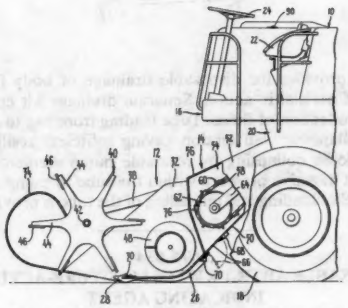


3,675,660

COMBINE STONE TRAP DOOR

Joseph C. F. Girodat, Mississauga, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada

Filed May 3, 1971, Ser. No. 139,428
Int. Cl. A01f 12/10
U.S. Cl. 130—27 JT 4 Claims



A stone trap door, in the path of feed of crop material, in a combine harvester is held in a closed position by a latch control by a solenoid. The solenoid is energized to open the stone trap door by an electronic rock detection circuit. The rock detection circuit includes a piezoelectric ceramic disc attached to the bottom of the table to detect vibrations induced in the bottom of the table by material conveyed along the bottom of the table toward the trap door. The piezoelectric ceramic disc produces an output signal which varies in frequency and amplitude depending upon the frequency and amplitude of the vibrations induced in the bottom of the table. The output signal passes through a band pass amplifier and a peak detector which filter out all the output signals except those produced by rocks or other hard objects. The signal produced by rocks or other hard objects is then amplified to energize the solenoid and open the stone trap door.

3,675,661

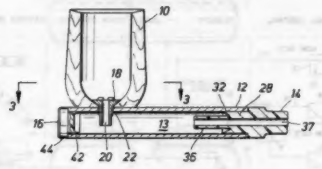
SMOKING PIPE

William R. Weaver, 1616 Radford Street, El Paso, Tex.

Filed March 18, 1970, Ser. No. 20,659
Int. Cl. A24f 01/08
U.S. Cl. 131—212 R 3 Claims

A smoking pipe is described having a condensing chamber for collecting and trapping tar, nicotine, water and other condensate resulting from the products of combustion. The condensing chamber is formed inside of the tubular stem of the pipe. A mouthpiece is detachably connected to the stem with a fluid-tight connection to prevent the condensate from leak-

ing out of the condensing chamber. An extension of the mouthpiece projects inside the condensing chamber to prevent the bitter condensate from passing through the smoke bore inside the mouthpiece and into the mouth of a smoker.



Condensate in the smoking chamber is prevented from leaking into the tobacco-receiving bowl by means of a center-bored screw which extends from the bowl of a substantial distance inside the condensing chamber.

3,675,662

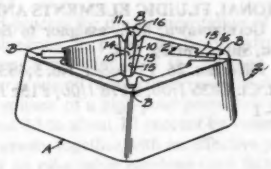
CIGARETTE RECEPTACLE AND EXTINGUISHER

Ralph W. Askins, 515 S. Barranca, Apt. 5, Cavina, Calif.

Continuation-in-part of Ser. No. 773,150, Nov. 4, 1968, abandoned. This application May 4, 1970, Ser. No. 34,074

Int. Cl. A24f *19/14*

U.S. Cl. 131—235 R **12 Claims**



An extinguisher with opposed side walls and a backwall to support a cigarette in a standing position, with a pocket at the bottom to receive and extinguish the burning end, and with top and front openings joined in a continuous slot through which the cigarette can be initially received and later flipped out of the pocket with a forwardly tilting movement.

3,675,663

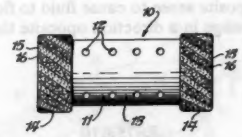
HAIR ROLLER

Sam S. Calandra, 141 Greenfield Drive, Tonawanda, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,700The portion of the term of this patent subsequent to Oct. 28, 1986, has been disclaimed.

Int. Cl. A45d *2/36*

U.S. Cl. 132—40 **5 Claims**



A hair roller construction comprising an elongated mandrel having a longitudinal axis and a central hair receiving portion, and first and second spaced bands flanking the hair receiving portion, the bands including alternate strips of hook and pile fabric extending in a spiral direction relative to the longitudinal axis, and extending over onto the end portions of the mandrel.

3,675,664

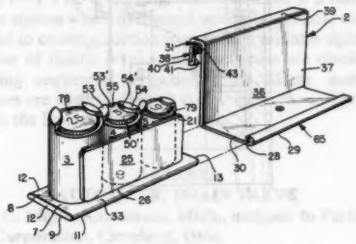
COIN HOLDER WITH REMOVEABLE MOUNTING BRACKET

George J. Kltowski, 5500 N. Neenah Ave., Chicago, Ill.

Filed May 5, 1970, Ser. No. 34,714

Int. Cl. G01d *1/00*

U.S. Cl. 133—6 **10 Claims**



A coin holder for multiple coin denominations comprising different diameter tubes to fit for example quarters, dimes and nickels with springs therein for urging the coins upwardly against stops, the tubes being of graduated height so that the user may identify the coins by feel. The holder has a mounting bracket which is adaptable to hang on the car ash tray and at least one of the springs in one of the tubes is arranged to urge a releasable locking element into engagement with the bracket in addition to urging the coins in the particular tube upwardly. The tubes are tangentially arranged at the front side of the holder to develop a finger accommodation space between the back sides of the tubes and a mounting bracket to facilitate assembly and disassembly of the parts.

3,675,665

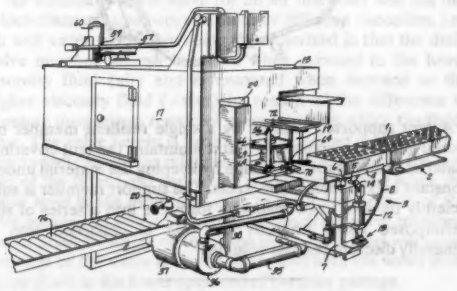
CASE WASHING MACHINE

Howard M. Sadwith, Plainfield, N.J., assignor to Industrial Washing Machine Corporation, Matawan, N.J.

Filed Jan. 15, 1965, Ser. No. 425,701

Int. Cl. B08b *3/02, 9/08*

U.S. Cl. 134—46 **8 Claims**

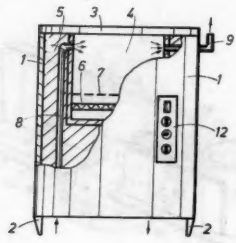


A washing machine for washing reuseable cases, containers and the like includes loading platform for automatically receiving the containers and transferring the containers into an enclosed washing area which includes jets for washing the containers. The machine also includes a rinsing area which is seperated from the washing area by a partition and a reversing platform for transferring the containers from the washing area to a rinsing area so the containers may there be rinsed. The machine further includes a conveyor to automatically remove the washed and rinsed containers from the rinsing area and from the washing machine itself.

3,675,666
APPARATUS FOR CLEANING METALLIC PARTS

Gerardo Cama, Barcelona, Spain, assignor to Coltex, S.L., Barcelona, Spain

Filed April 11, 1968, Ser. No. 720,524
Claims priority, application Spain, April 13, 1967, 129471
Int. Cl. B08b *3/08, 3/10*
U.S. Cl. 134—105 2 Claims

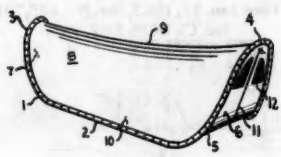


Apparatus for cleaning metallic components employed in fabricating plastic synthetic materials of any material adhering to or impregnating the components which includes a tank disposed in an insulated casing and electrical resistances capable of developing temperatures of 100° C. within the tank located adjacent the bottom thereof. A grating above the resistances supports and prevents the components from directly engaging the resistances in and the components are submerged in a treatment solution of chemical substances the tank. Upon activating the resistances, a reaction of the substances causes the dissolution of the material adhering to or impregnating the components thereby fully cleaning the components.

3,675,667
SELF-ERECTING TENT

Jack V. Miller, 700 N. Auburn Avenue, Sierra Madre, Calif.

Filed Sept. 25, 1970, Ser. No. 76,515
Int. Cl. A45f *1/00*
U.S. Cl. 135—1 R 9 Claims



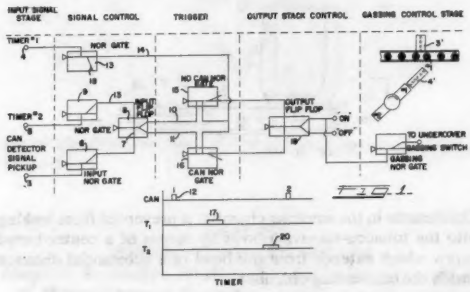
A tent supported entirely by a single resilient member of closed geometry, so shaped that it maintains the tent covering material in an inhabitable shape by keeping the material under constant biaxial membrane stress. The support member is sufficiently flexible to be manually formable into a series of superimposed loops whereby the tent is collapsed into a generally discbshaped flat volume.

3,675,668
METHOD AND FLUIDIC CONTROL SYSTEMS FOR OPERATING A CAN CLOSING MACHINE

James J. La Rocca, La Grange, and Blase J. Bartolomeo, Calumet City, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 720,239, April 10, 1969, abandoned.
This application Jan. 22, 1971, Ser. No. 108,953
Int. Cl. F15c *1/12*
U.S. Cl. 137—1 22 Claims

A fluidic control system for operating a can closing machine of the type having one or two end stacks. This system has the property that the output of the system is determined by a timer on the machine and operates at a specific point in the system memory during a particular time interval in the machine cycle.

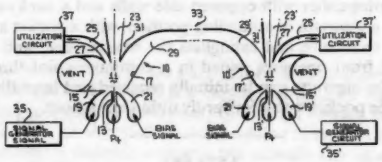


Thus, variations in the spacing between cans entering the closing machine are permissible. This machine operates rapidly by use of fluidic interface valves.

3,675,669
BI-DIRECTIONAL FLUIDIC ELEMENTS AND CIRCUITS

Peter Bauer, Germantown, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Jan. 26, 1970, Ser. No. 5,483
Int. Cl. E03b *1/00;* F17d *1/00;* F15c *1/14*
U.S. Cl. 137—1 12 Claims



A bi-directional fluidic element includes an input-output passage which conducts incoming signals into interacting relationship with a fluid stream to deflect the latter in one sense towards an output passage. Outgoing signals deflect the fluid stream in an opposite sense to cause fluid to flow through the input-output passage in a direction opposite that of incoming signals.

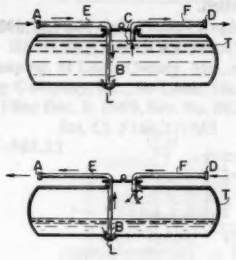
3,675,670
LIQUID TRANSPORTING TANK FOR TANK CARS

Osamu Ogawa, Utsunomiya-shi, Tochigi, Japan, assignor to Fugi Heavy Industries, Ltd.

Filed July 16, 1970, Ser. No. 55,547
Claims priority, application Japan, Nov. 14, 1969, 44/91254
Int. Cl. F17d *1/00*
U.S. Cl. 137—1 4 Claims

A liquid transporting tank for tank cars which has a first pipe for introducing liquid into the bottom of the tank car and

a second pipe for removing liquid from the top of the tank car. Hoses interconnect the outlet pipe of a preceding car to the



inlet pipe of a subsequent car so that both cars may be filled through the inlet to the preceding car.

3,675,671

PROCESS FOR TRANSPORTATION OF WAXY CRUDE OILS

William M. Sweeney, Wappingers Falls, and David Lee Alexander, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 102,052
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 8 Claims

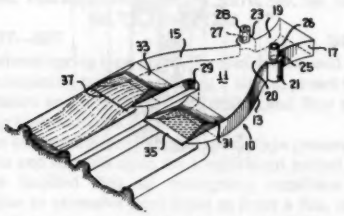
An improved process for the transportation of waxy crude oils through pipelines, in particular North African crudes, which comprises introducing into the pipeline a low-pour point, low-sulfur crude oil blend comprising about 70 to about 90 percent by volume of a high-pour point, low-sulfur, waxy crude, and about 30 to about 10 percent by volume of a low-wax, low-pour crude, together with an effective pour depressant amount of an oil-soluble ethylene-vinyl fatty acid ester copolymer. The pipeline flow characteristics of the blend of the crudes are distinctly superior to the high-pour point, low-sulfur, waxy crude forming the major portion of the blend or the high-pour point, waxy crude with the same pour point depressant. In another aspect, this invention relates to the composition comprising the blended crudes together with the oil-soluble copolymer and to a process for preparing such compositions.

3,675,672

FLUIDIC IRRIGATION

Peter A. Freeman, Baltimore, Md., assignor to Bowles Fluidics Corporation

Filed July 17, 1969, Ser. No. 842,599
Int. Cl. F15c *1/04, 1/16*
U.S. Cl. 137—81.5 33 Claims



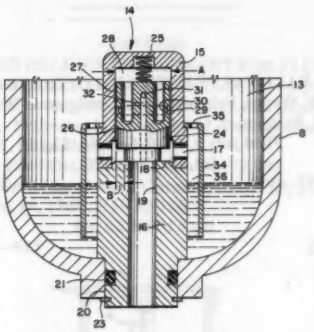
Fluidic techniques and elements are disclosed for performing various irrigation functions, including sequential filling of irrigation ditches by automatic operation of fluidic diverter elements. A novel diverter element is disclosed which is operable either as a switching or proportional type fluidic amplifier, and includes a weir formed at the downstream end of its output passages and a vortex chamber projecting outwardly from its interaction region for converting part of the power stream flow to vortical flow which augments aspiration of ambient control fluid. In a further aspect of the invention, hard cut-off of liquid flow is achieved with a roller curtain gate comprising a flexible sheet adapted to be selectively rolled or unrolled over a flow opening. Also disclosed is a fluidic control for a siphon whereby venturi action in a fluidic element is employed to create a suction force which initiates siphon flow. A number of fluidic level sensing schemes are disclosed for controlling sequential irrigation ditch filling, and fluidic techniques are disclosed which compensate for environmental factors in the level detection schemes.

3,675,673

AUTOMATIC DRAIN VALVE

William C. Nilges, Kalamazoo, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sept. 25, 1970, Ser. No. 75,570
Int. Cl. F16t *1/00*
U.S. Cl. 137—187 9 Claims



An automatic drain valve for an air line filter and the like which discriminates between fluids of different viscosities, i.e., air and water, said valve being characterized in that the drain valve member thereof is seated when exposed to the lower viscosity fluid (air) and is unseated when exposed to the higher viscosity fluid (water) by reason of the difference in pressure drop across restrictor means through which the fluids flow. The valve herein is further characterized in that it has a downwardly extending inlet passage which opens near the bottom of the filter bowl and which is so arranged that when the water level in the filter bowl rises to the upper portion of the inlet passage to effect unseating of the drain valve member, the air pressure acting on the water in the filter bowl will cause drainage of the water from the filter bowl until the water level drops down to the lower open end of the inlet passage.

3,675,674

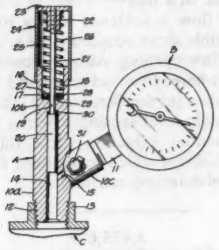
CONNECTION FITTING DEVICE WITH CLEAN-OUT

Donald J. Brown, La Crescenta, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.

Filed Sept. 15, 1970, Ser. No. 72,452
Int. Cl. F16k *5/22*
U.S. Cl. 137—244 3 Claims

A connection fitting for mounting a pressure gauge or the like comprising a generally Y-shaped tubular body in which a straight body portion is threaded at one end for connection

with a fluid source, the body having a branch portion for mounting the gauge, and with a reciprocable clean-out plunger in the straight body portion having an actuating part extending from the opposite end of the straight body portion,



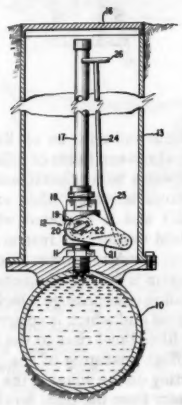
whereby the clean-out plunger can be moved across the inner end of the branch portion and into the fluid inlet flow path leading to the branch portion for keeping the same free of occluding media.

3,675,675

BALL VALVE WITH ARM OPERATOR

William W. Wedge, Fairfield, Conn., assignor to Wedge, Incorporated, Bridgeport, Conn.

Filed July 8, 1970, Ser. No. 53,158
Int. Cl. F16l 5/00
U.S. Cl. 137—368 **3 Claims**



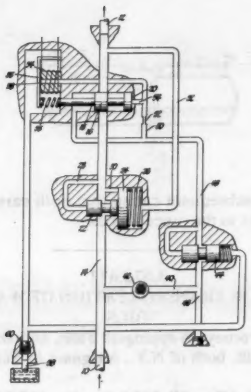
A ball valve mounted on an underground water main has a pivotable operating shaft extending laterally outwardly thereof and an arm is mounted on the outer end of the shaft. A substantially vertically positioned rod extends upwardly toward the surface of the ground and has its lower end bent outwardly at angle of about 30° from the vertical. This bent end is pivotally connected to the end of the arm which is disposed at a slight angle below the horizontal when the valve is closed. Pulling of the rod upwardly will open the valve and pushing the rod downwardly will close the valve.

3,675,676

POWER TRANSMISSION

Maurice J. O'Connor, Farmington, and Donald J. Davidson, Keego Harbor, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed April 9, 1971, Ser. No. 132,698
Int. Cl. F16k 31/12
U.S. Cl. 137—501 **7 Claims**



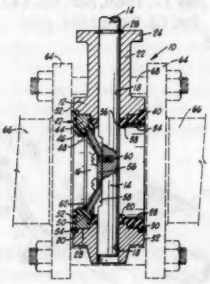
An electrically controlled hydraulic flow control valve has a nozzle and flapper valve acting as a pilot control for a shiftable main throttle valve. A pressure compensating valve responsive to the pressure drop across the main throttle keeps the flow rate constant, independent of inlet and outlet pressures. Pilot control fluid is supplied by a pressure reducing valve which maintains constant pressure on a small area servomotor, biasing the throttle valve toward closed position. The flapper valve receives control fluid from the reducing valve through a fixed orifice and by means of a feedback connection with the throttle valve, maintains the latter in a position corresponding to the energization of the solenoid.

3,675,677

DISC VALVE WITH MOLDED-IN-PLACE LINER AND REPLACEABLE SEAT

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

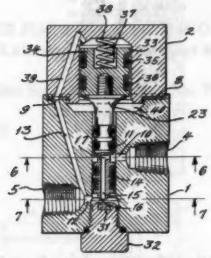
Filed April 2, 1970, Ser. No. 25,040
Int. Cl. F16k 1/22
U.S. Cl. 137—375 **9 Claims**



A disc valve having an elastomer lining molded-in-place therein shielding the valve body from the fluid being handled and forming seals around the valve stem. The disc of the valve is of the off-set type and engages a replaceable seat. Dual seats

are also disclosed. The combination of the valve body in a surrounding operating housing supporting the valve operator is also disclosed.

3,675,678
HIGH PRESSURE REGULATOR
Robert F. Lamping, St Louis County, Mo., assignor to Modern Engineering Company, Inc., St. Louis, Mo.
Filed Dec. 8, 1969, Ser. No. 883,005
Int. Cl. F16k *31/365*
U.S. Cl. 137—505.22 **6 Claims**

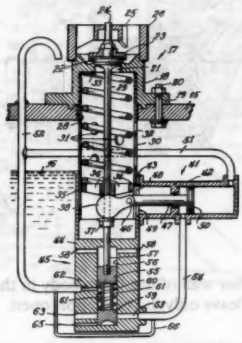


Gas pressure regulator for reducing relatively high storage pressure (e.g., 6,000 p.s.i.) to a conventional (e.g., 2,500 p.s.i. or less) working pressure, in which the means controlling fluid flow between input and output includes a differential area valve, the larger area of which is exposed to the input pressure, and the lesser area of which is exposed to the input pressure, with an area of intermediate size exposed to the pressure of a relatively fixed volume of gas acting on the differential valve in major degree counter to the action of the output pressure on the larger area of the differential area valve. The pressure on said fixed volume is adjusted upward by manually admitting more gas from the input, and adjusting downward by manually releasing gas therefrom either to the output side or to the atmosphere. A coil spring adds to the force applied by the gas at the larger area of the differential valve, thereby tending to maintain closed the passage between input and output; and a valve controlling flow from input to output has input pressure applied to it in such manner as to add the force on said differential valve, tending to open the passage between input and output.

3,675,679
PRESSURE RELIEF VALVE CONSTRUCTION FOR RAILWAY TANK CARS AND THE LIKE
Frederich William Schwartz, Jr., Clarendon Hills, Ill., assignor to Jamesbury Corp., Worcester, Mass.
Continuation-in-part of Ser. No. 91,907, Nov. 23, 1970, abandoned. This application Dec. 29, 1970, Ser. No. 102,443
Int. Cl. F16k *31/12*
U.S. Cl. 137—587 **24 Claims**

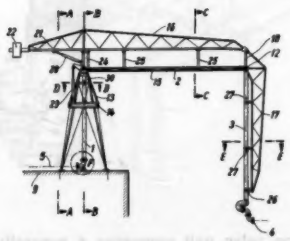
Conventional spring type pressure relief valves used on fluid pressure containing tanks function at a single, preset tank internal pressure and provide a fixed orifice and flow area for discharging tank contents.

When an essentially conventional spring type pressure relief valve opens and remains open for a significant period of time it may be implied that an emergency condition exists, probably due to excessive heat input as from a fire, and that tank internal pressure exceeds the valve set-to-discharge pressure. This invention identifies the emergency condition by means of the time-dwell of the valve in open position, and actuates a secondary mode of valve operation which provides (a) reduced set-to-discharge pressure compatible with tank shell strength at the elevated temperature produced by the fire condition and (b) additionally provides increased discharge



capacity to allow sufficient flow to attain a reduced tank internal pressure level.

3,675,680
JOINTED DELIVERY EQUIPMENT FOR FLUIDS, PARTICULARLY LOW TEMPERATURE LIQUIDS
Josef Frohlich, Dusseldorf-Rath, Germany, and Jacob Leguyt, Dordrecht, Netherlands, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Oct. 12, 1970, Ser. No. 79,992
Claims priority, application Germany, Jan. 13, 1970, P 20 02 147.0; Oct. 15, 1969, P 19 53 108.9
Int. Cl. B67d *5/00*
U.S. Cl. 137—615 **12 Claims**

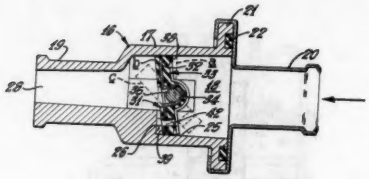


A tower-boom system for transfer of fluids in which the conduit means is relieved from bearing weight.

3,675,681
THREE-POSITION BUTTERFLY VALVE
Frank E. Obermaier, Park Ridge, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed Aug. 3, 1970, Ser. No. 60,259
Int. Cl. F16k *1/22, 1/52*
U.S. Cl. 137—625.3 **6 Claims**

A butterfly fluid flow valve having a full-on, full-off, and an intermediate flow position. The intermediate flow position is provided by a bleed port formed in the butterfly element which can be closed off by contact of the butterfly element

with a transverse wall portion formed within the valve body. The sealing lip of the butterfly element is adapted to seal



against the interior wall of the valve body in the intermediate flow position to leave only the bleed port open.

3,675,682

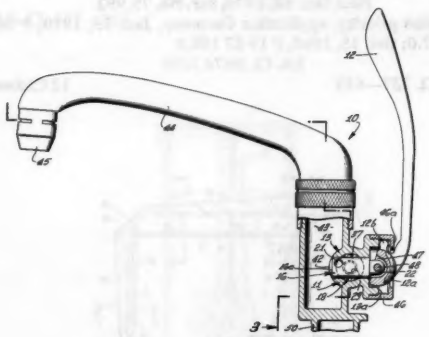
SELF-SEALING MIXTURE VALVE UNIT FOR SINGLE-HANDLED SINK OR LAVATORY FIXTURE

John K. Lyon, Pasadena, Calif., assignor to Price-Pfister Brass Mfg. Co., Pacoima, Calif.

Filed Nov. 16, 1970, Ser. No. 89,559

Int. Cl. F16k *11/02, 19/00*

U.S. Cl. 137—625.17 **12 Claims**



The mixing valve unit comprises a generally cylindrical valve body made of flexible material capable of conforming to companion structures whereby the body itself seals against companion structures under the influence of fluid pressure. The body has a pair of large diameter inlets at opposite ends whereby thin cylindrical walls of the valve body remain. The inlets respectively terminate at their inner ends at spaced flexible convex walls. The inside concave surfaces of the walls complement each other to form a transverse bore into which is fitted a relatively rigid valve control member or stem. The stem has flow control holes both opening into a central chamber, the flow control holes being registrable with small ports in the flexible walls. Angular movement of the stem controls proportion and axial movement controls volume, all in a well known cylindrical coordinate mixing valve system. The body is removably inserted into a simple cylindrical bore of a casting. The thin cylindrical walls of the valve body flex to achieve seals with the casting while the central arcuate walls flex to achieve seals with the valve stem.

3,675,683

MIXING FAUCET

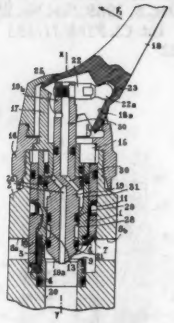
Yves Chapou, 21 Cours Marigny, Vincennes, Val de Marne, France

Filed Oct. 28, 1970, Ser. No. 84,595

Claims priority, application France, Nov. 5, 1969, 6937974

Int. Cl. F16k *11/02, 31/60*

U.S. Cl. 137—637.4 **3 Claims**



Warm water and cold water mixing faucet of the type comprising a rotary control plug provided with two gaskets having different inclinations in relation to the axis of said plug so that one gasket cuts off completely the cold water inlet while the other permits a maximum ingress of warm water, and vice-versa. In this faucet, these two gaskets consist of a single flange-shaped gasket comprising two portions having opposite inclinations, and surrounding the control plug in a zone registering with the warm water and cold water inlet orifices, disposed at a same level but in diametrally opposite positions. Said plug is formed with a lateral opening level with said orifices which communicates with an inner bore constituting the outlet duct for the mixed water.

3,675,684

PRESSURE VESSEL

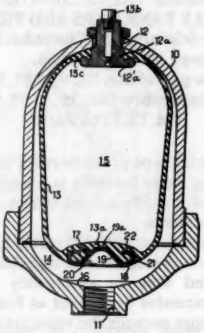
Jacques H. Mercier, Paris; Fernand Copine, Cergy, and Carlo Corbellini, Paris, all of France, assignors to Olaer Patent Company, Grand Duchy, Luxembourg, by said Copine and Corbellini

Filed March 4, 1970, Ser. No. 16,353

Claims priority, application France, March 18, 1969, 6907649

Int. Cl. F16l *55/04*

U.S. Cl. 138—30 **5 Claims**



The present invention relates to a pressure reservoir having a rigid container with a deformable bladder therein dividing

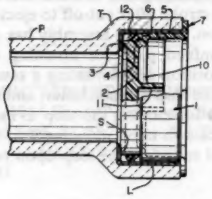
the container into two variable volume chambers, each adapted to receive fluid under pressure. A port is provided in communication with one of said chambers and valve means are associated with said port to close the latter. The valve means is controlled by deformation of the bladder upon expansion thereof when fluid is discharged through said port. The valve means is conformed so that a suction effect will be created due to the flow of fluid through said port, which will cause the valve means accurately to center on a fixed seat associated with the port to close the latter and prevent extrusion of the bladder.

3,675,685

PIPE STOPPER FOR BELL AND SPIGOT TYPE OF TILE

Charles Potter, Lakewood, Ohio, assignor to Amvit, Cleveland, Ohio

Filed Sept. 8, 1970, Ser. No. 70,112
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 **6 Claims**



A pipe stopper is receivable in the bell of a bell and spigot pipe for plugging the bell passage. It is a molded plug of stiff set plastic having a cylindrical peripheral face which is spaced from its inner end and a peripheral seating face extending therefrom entirely to the inner end of the plug. An abrupt generally radially extending shoulder extends between the adjacent ends of the faces. The plug is free from any shoulders or surfaces facing toward, and aligned with, faces or shoulders facing toward the inner end. An elastomeric gasket having an inner face resiliently engaging the seating face in embracing relation is provided. It has a radial cross section such that it cannot roll about its circumferential axis and thus off of the end of seating face. The gasket fits in sealing relation to the seating face and the surrounding inner wall of the pipe bell in which the plug is installed. The main advantage is that the plug is of a shape that can be molded readily in a very simple mold, and yet, in combination with a proper gasket, seals effectively.

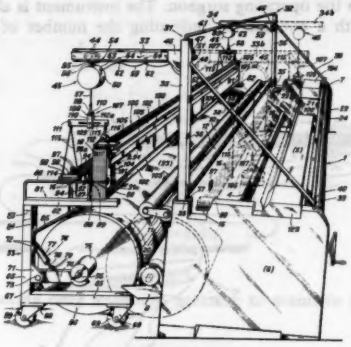
3,675,686

APPARATUS FOR MOUNTING A HARNESS IN A WEAVING MACHINE

Josef Steiner, Winterthur, and Adolf Widmer, Rickenbach-Sulz, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed May 20, 1970, Ser. No. 39,125
Claims priority, application Switzerland, May 22, 1969, 7796/69
Int. Cl. D03j *1/14;* **D02h** *13/38*
U.S. Cl. 139—1 **6 Claims**

The beams are pivotally mounted on the uprights which are secured to the weaving machine so as to lift and transport the harness containing the stop motion droppers, heald shafts and reed via the lifting gear means from the conveying device to a position within the weaving machine. The components of the



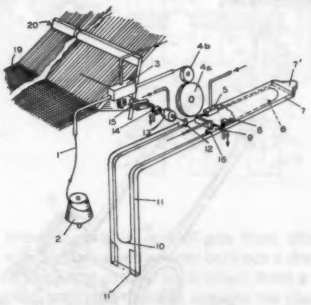
harness are then put in place in the machine in the respective operative positions.

3,675,687

MECHANISM FOR PREPARING AND PRESENTING SINGLE THREAD LENGTHS TO A WEFT DEVICE OF A WEAVING LOOM

Geert Jan Vermeulen, and Antonius Martinus Barten, both of Deurne, Netherlands, assignors to N.V. Machinefabriek L. The Strake, Deurne, Netherlands

Filed Feb. 23, 1971, Ser. No. 118,043
Claims priority, application Netherlands, March 30, 1971, 7003045
Int. Cl. D03d *47/34*
U.S. Cl. 139—127 P **2 Claims**



A pneumatic thread preparing and presenting mechanism which is suitable for handling low twisted yarns in that the thread in its path from the storage cone to the weaving shed is exposed to relatively low tensions.

3,675,688

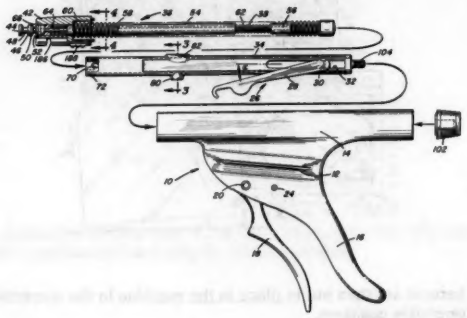
INSTRUMENT FOR LIGATING, SUTURING AND DIVIDING ORGANIC TUBULAR STRUCTURES

Graham W. Bryan, Ridgefield, and David T. Green, Norwalk, both of Conn., assignors to United States Surgical Corporation, Baltimore, Md.

Filed April 27, 1970, Ser. No. 32,247
Int. Cl. B21f *15/00*
U.S. Cl. 140—93 D **16 Claims**

A medical instrument and associated cartridge for ligating an organic tubular structure, for suturing this structure in two places with a pair of sterilized staples and for dividing the tu-

bular structure intermediate the suturing staples. The instrument is provided with a variable cam so that the ligating, suturing and dividing stages are all performed with uniform effort from the operating surgeon. The instrument is also provided with a counter for indicating the number of staples



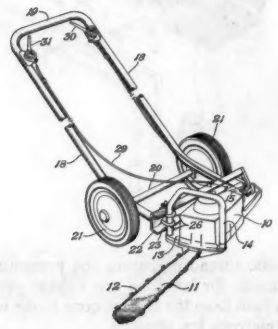
remaining in the cartridge. The novel cartridge ensures that the stapled and severed tubular structures are ejected from the instrument after the operation, operates smoothly without binding, and includes a lock which holds the elements of the cartridge in fixed positions during all stages of transit.

3,675,689

WHEELED CARRIER FOR CHAIN SAW

Monroe C. Rice, 1101 W. Lowden, Fort Worth, Tex.

Filed Dec. 14, 1970, Ser. No. 97,606
Int. Cl. B27b *17/02*
U.S. Cl. 143—32 N 5 Claims



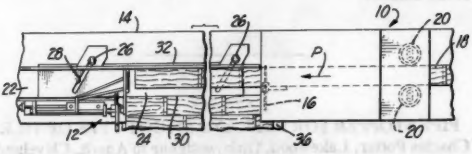
A wheeled carrier for supporting a conventional portable chain saw having a transverse handle near the front of the engine housing and a rearwardly projecting handle having a throttle trigger projecting therefrom. The saw is detachably mounted on the carrier at three points and the guide bar and cutting chain thereon project laterally from the carrier close to the ground. The throttle trigger is operated by cable control mounted on the carriage frame, and if the saw includes manual means for oiling the cutting chain, a similarly mounted cable control is provided for that purpose.

3,675,690

END STOP ASSEMBLY FOR AN AUTOMATIC CUT-OFF SAW

Ruben F. Chapa, 6411 Rosemead, Pico Rivera, Calif.

Filed Nov. 6, 1970, Ser. No. 87,383
Int. Cl. B27b *27/02, 31/08*
U.S. Cl. 143—46 F 9 Claims



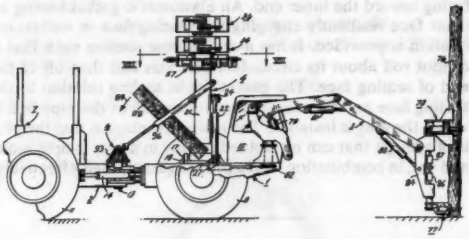
An end stop assembly for an automatic timber cut-off saw including an ejector plate having an extended position for receiving the cut-off leading end of each timber and movable through an ejection stroke after cut-off to eject the cut-off end from cutting position. The stop assembly has a stop movable along the timber infeed path for arresting each incoming timber in cutting position and actuating a saw central switch upon retraction of the stop by each timer, and means actuated by the ejector plate for moving the stop to and retaining the stop in extended position upon movement of the plate to extended position and releasing the stop upon retraction of the stop.

3,675,691

TREE HARVESTING APPARATUS

John J. Denovan, and John Kurelek, both of Brantford, Ontario, Canada, assignors to Koehring-Waterous, Ltd., Brantford, Ontario, Canada

Filed Sept. 3, 1969, Ser. No. 854,971
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 4 Claims



A telescopic tower is mounted on a mobile chassis and carries equipment for producing logs from a tree that has been severed at its base from the ground and transferred to a raised position adjacent the top of the contracted tower. An upstroke of a reciprocable upper part of the tower delimbs the butt end of the raised tree to desired log length, and a downstroke lowers the tree a corresponding distance. After a log has been cut from the lowered tree, the operating cycle is repeated as needed to process the usable remainder of the tree into logs. The tower is leanable to one side to let the slash fall to the ground rather than on the chassis of the apparatus.

3,675,692

METHODS OF MAKING ARTICLES FROM FIBER BOARD

Graham Wilton Jeans, 77 Butterfield Road, Wheathampstead, England

Filed March 24, 1970, Ser. No. 22,207
Int. Cl. B27d *1/08*; B27m *3/18*; B27h *1/00*
U.S. Cl. 144—317 2 Claims

This invention provides a method of making furniture from flat sheets of fiberboard

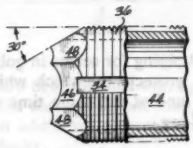
In accordance with the method a flat sheet of fiberboard is cut to a particular shape and then softened preferably by immersion in a liquid. The cut and softened sheet is then bent to a required three-dimensional shape and is fixed in that shape by drying.

3,675,693

CHIPPER CUTTER AND HOLDERS THEREFOR

Thomas I'Anson, 4014 Hunts Point Road, Bellevue, Wash.

Filed Sept. 24, 1970, Ser. No. 75,154
Int Cl. B27g *13/04*
U.S. Cl. 144—241 6 Claims



When installed on the cylindrical cutter surface of the chipper drum, the cutter presents a knife having an arcuate cutting edge thereon, the relatively concave face of which is described by a surface of revolution, and the relatively convex face of which has a plurality of facets described by angularly successive pairs of dihedral planes passing through the concave face of the edge at acute angles thereto, so that the edge is scalloped in outline. The knife is formed on an annular blade having a plurality of such knives at angularly spaced locations thereabout; and the blade is defined by one end edge portion of an elongated tubular element which is installed in either a socket-like holder or a saddle-like holder, having means thereon whereby the element can be alternately releasably interlocked with the holder in a relative longitudinal position presenting one knife, or released and rotated to present another knife, in the same or a different such position.

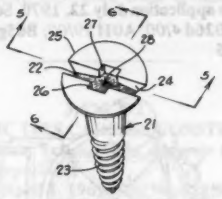
3,675,694

SCREW AND SCREW DRIVER COMBINATION

John W. Barlow, 263 Brighton Ave., San Francisco, Calif.

Filed Jan. 13, 1971, Ser. No. 106,045
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 A 3 Claims

The disclosure relates to the combination with a screw of a screwdriver containing laterally extending keys on the shank thereof affording a flex coupling between the screw head and the screwdriver with the keys of the driver removably fitting keyways of the cone-shaped head of the screw during use and materially compensating for misalignment as well as eliminating the bouncing of the blade of the driver from the screw slot,



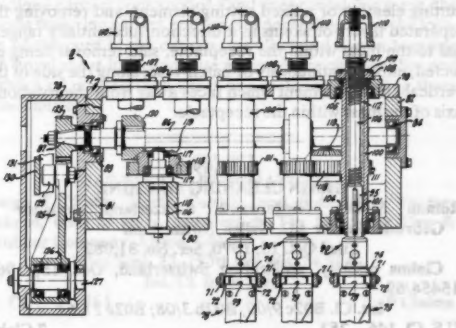
thus requiring only minimum pressure to maintain positive coupling.

3,675,695

DRUPE PITTER

Konrad E. Meissner, Lafayette, and Etheride R. McClelland, Livermore, both of Calif., assignors to Filper Corporation, San Ramon, Calif.

Division of Ser. No. 814,118, April 7, 1969, Pat. No. 3,583,456. This application March 1, 1971, Ser. No. 119,684
Int. Cl. A23n *3/00*
U.S. Cl. 146—28 A 8 Claims



A pitter for removing whole or half pits from clingstone drupe halves in which relative movement between a drupe half and a member on the pitter toward each other, from a spaced position, is effected, until said member engages the planar surface of the drupe half around the exposed pit, and thereafter, continued movement in the same direction automatically actuates a mechanism that causes pit engaging elements on said member to engage the side of the pit adhered to the pit cavity, and to apply yieldable outward pressure on the pit to tension the fibers holding the pit in said pit cavity. At the same time such pressure is applied said elements are revolved relative to the pit to break the tensioned fibers and to rotate the pit relative to the peach half when adhesion is weakened, and said member and elements are thereafter automatically actuated to withdraw and to release the detached pit from the half, and to restore the member to its spaced position preparatory to another pitting operation.

The invention also includes the provision of a plurality of pitters operatively connected with a single source of power for simultaneously pitting a row of drupe halves employing the above structure and for simultaneously positioning and removing successive rows of drupe halves to and from said pitting position.

3,675,696

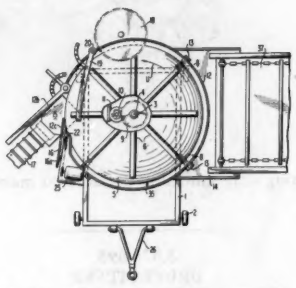
PROCESS FOR BREAKING UP A MASS OF PRODUCE

Ernst Welchel, Bahnhofstrasse 1,, Heiningen Ueber Goeppingen, Germany

Division of Ser. No. 549,546, May 12, 1966, Pat. No. 3,545,511. This application July 22, 1970, Ser. No. 57,218

Int. Cl. B26d *4/00;* A01f *29/00;* B65g *65/00*

U.S. Cl. 146—225 16 Claims



Method for intermediate storage and separation of a mass of stalk or leaf-type crops, including feeding the crops into a receptable, the base of which is rotating and causes the mass to be set into rotation about a vertical axis, continuously severing from the peripheral rim of the mass layers or skeins of predetermined dimensions, the severing be effected at least in a substantially vertical cutting plane by means of a driven cutting element or a fixed cutting element, and removing the separated layers or skeins in a direction substantially tangential to the mass within the receptable, said removal being effected, either continuously or batch-wise, along the side of the vertical cutting element which faces away from the rotational axis of the mass within the receptacle.

3,675,697

GRAIN CLEANING MACHINE

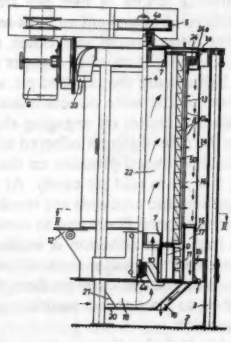
Roman Muller, Niederuzwil, Switzerland, assignor to Gebruder Buhler AG, Gallen, Switzerland

Filed Oct. 15, 1970, Ser. No. 81,082

Claims priority, application Switzerland, Oct. 15, 1969, 15454/69

Int. Cl. B02c *9/00;* B02b *3/08;* B02c *11/64*

U.S. Cl. 146—253 7 Claims



A machine for cleaning grain or the like which is of the type incorporating a vertically oriented centrifuge possessing a rotor simultaneously constructed as an air blower and a substantially cylindrical jacket having openings or recesses which surrounds the rotor. The grain which is to be cleaned is upwardly conveyed from below along the centrifuge to an outlet, and the impurities together either with water and air or air alone fall in an annular compartment bounded at the inside by the cylindrical jacket, downwardly into a funnel-shaped housing portion located below the centrifuge. This housing portion possesses a throughflow or throughpassage communicating with the aforesaid annular compartment and additionally possesses an inlet for air communicating with the internal space of the centrifuge. Beneath the housing portion there is arranged a collecting basin leading to a first withdrawal means, there also being provided a second withdrawal means which, when the machinery operates so as to carry out a dry treatment, is coupled by means of a suitable connection member in flow communicating fashion with the throughflow or throughpassage means.

3,675,698

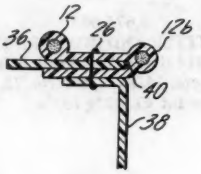
PROTECTIVE PIPING FOR GOLF BAGS

Loman H. LeGoff, Morrisville, Pa., assignor to Acushnet Company

Filed July 27, 1970, Ser. No. 58,370

Int. Cl. A63b *55/00*

U.S. Cl. 150—1.5 R 5 Claims



A new and useful piping for seams in golf club bags is disclosed. The piping protects the stitch which joins the two pieces at the seam and at the same time enhances the appearance of the golf bag.

3,675,699

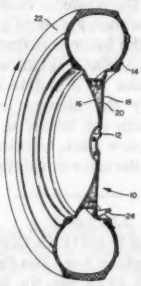
WHEEL ASSEMBLY WITH TIRE COOLING MEANS

Luke Ralph Ocone, Philadelphia, Pa., assignor to Pennwalt Corporation

Filed Feb. 27, 1970, Ser. No. 15,172

Int. Cl. B60b *19/06*

U.S. Cl. 152—153 1 Claim



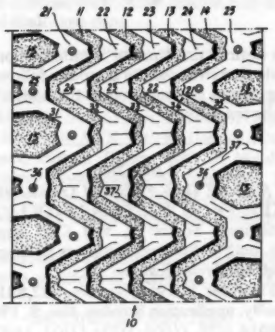
A wheel assembly has an enclosed and evacuated chamber extending between its hub and rim. Within the chamber is a liquid which is propelled toward the outer periphery of the assembly by centrifugal force during rotation thereof. Heat from the tire is ultimately transferred to the liquid to vaporize the

same, and consequently cool the tire. Because the chamber is evacuated, the vapor rapidly moves inwardly toward the hub. Ambient air contacting the external surfaces of the assembly condenses the vapor, and centrifugal force propels the condensate toward the outer periphery once again. This process is continuously repeated.

3,675,700
SNOW TIRE

Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome, France

Filed July 23, 1970, Ser. No. 57,594
Claims priority, application France, July 28, 1969, 6925816; June 1, 1970, 7020094
Int. Cl. B60c *11/16*
U.S. Cl. 152—209 **5 Claims**

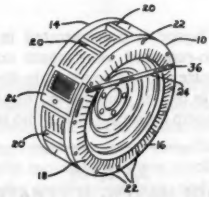


The tread of a snow tire is formed with a plurality of spaced-apart blocks in relief succeeding one another in the longitudinal direction and additional elements in relief connecting the spaced-apart blocks.

3,675,701
AUXILIARY TIRE TRACK

George E. Garrison, 6035 18th S. W., Seattle, Wash.

Filed June 30, 1970, Ser. No. 51,063
Int. Cl. B60c *27/20*
U.S. Cl. 152—225 **8 Claims**

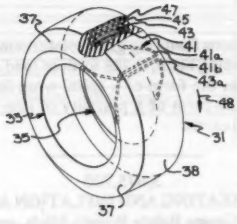


A tire encircling track for increasing the grip of a motor vehicle tire on a road surface comprising a pair of molded flexible rim portions interconnected by transversely extending rib portions to form an adjustable track adapted to encircle a motor vehicle tire. An adjustable self-locking connecting means for holding the ends of the track together and for holding the track itself on the motor vehicle tire is also provided. An additional restraint is provided to hold the track on the vehicle tire prior to locking of the connecting means. In another embodiment, the entire track is molded as a single flexible unit.

3,675,702
PNEUMATIC TIRE CARCASS CONSTRUCTION

Charles F. Schroeder, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed April 1, 1969, Ser. No. 811,930
Int. Cl. B60c *5/00, 9/06, 13/00*
U.S. Cl. 152—354 **9 Claims**

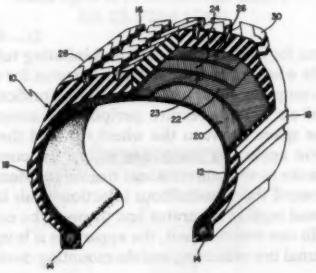


Unique carcass constructions and tires containing same, the carcass featuring variant cord angles depending upon the location of the cord in the carcass, are disclosed herein together with novel sheet-like candidate materials for carcass plies and methods of making such sheet-like materials featuring these variant angles.

3,675,703
BIAS-BELTED PNEUMATIC TIRE

George T. Watts, North Canton, and Robert W. Yeager, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 23, 1970, Ser. No. 74,574
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 **9 Claims**



A bias-belted pneumatic tire having a pair of belt plies, the radially inner ply of said belt plies having a lower modulus of elasticity than the radially outer ply of said pair of belt plies.

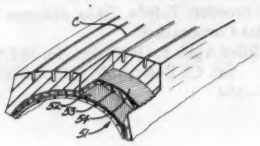
The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

3,675,704

TIRE CONSTRUCTIONS

Alfred Marzocchi, Cumberland; Gustav E. Benson, Edgewood, and Robert E. Leach, Cumberland, all of R.I., assignors to Owens-Corning Fiberglas Corporation

Division of Ser. No. 706,160, Feb. 16, 1968, Pat. No. 3,523,472. This application May 8, 1970, Ser. No. 48,707
Claims priority, application Belgium, Feb. 17, 1967, 39909
Int. Cl. B60c *9/12, 7/00*
U.S. Cl. 152—361 4 Claims



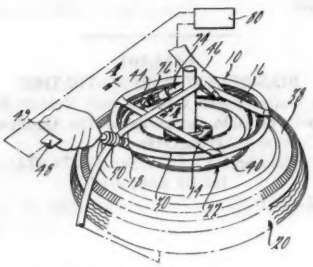
Tire constructions featuring glass reinforcement in the form of a tread reinforcing band, in the form of load supporting stiff toroidal hoops, in the form of a spiral wrap for organic cord plies and/or in the form of a plurality of non-woven plies of mutually parallel cords.

3,675,705

TIRE BEAD SEATING AND INFLATION APPARATUS

Lee M. Corless, Grosse Pointe Woods, Mich., assignor to B & J Manufacturing Company, Glenwood, Ill.

Filed Nov. 16, 1970, Ser. No. 89,952The portion of the term of this patent subsequent to Jan. 5, 1988, has been disclaimed.
Int. Cl. B60c *25/12*
U.S. Cl. 157—1.1 13 Claims



Apparatus for seating the beads and inflating tubeless tires on a vehicle wheel is provided. The apparatus for seating the tire beads comprises an annular tube having orifice means for injection of air under pressure peripherally around the tire through the space between the wheel rim and the tire bead. The inflation apparatus comprises means for connecting air under pressure to the conventional tire valve. Means are provided to control the simultaneous injection of air into the tire from the bead seating apparatus and through the conventional tire valve. In one embodiment, the apparatus is integrated into a conventional tire mounting and de-mounting device.

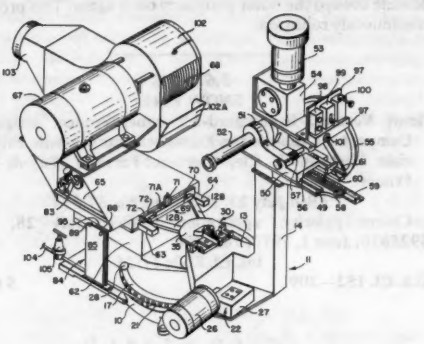
3,675,706

TIRE BUFFING MACHINE

William S. Cahill, Danville, Va., assignor to Cahill Manufacturing Company, Inc., Danville, Va.

Filed April 14, 1971, Ser. No. 133,862
Int. Cl. B29h *21/08*
U.S. Cl. 157—13 15 Claims

A machine for buffing a tire of any desired size and width includes a tire support mounted on a base for oscillation around an axis perpendicular to the base and for sliding movement in a plane parallel to the base. A cutting means is mounted on the base for sliding movement in a plane parallel to the base towards the tire. A template with a one to one ratio with



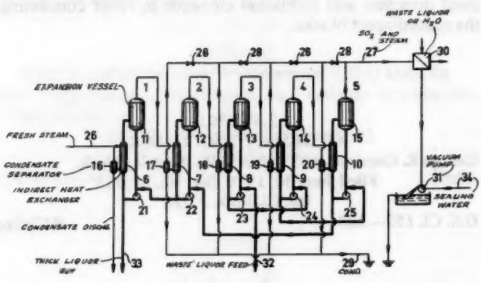
respect to the desired tire contour is mounted on the tire support to oscillate therewith, and a template follower connected to the cutting means for movement therewith is urged into contact with the template.

3,675,707

PROCESS AND DEVICE FOR RECOVERING SULFUR DIOXIDE FROM WASTE SULFITE LIQUOR

Per-Erik Andersson, Sundsvall, and Carl Arne Bergholm, Nynashamn, both of Sweden, assignors to Svenska Cellulosa Aktiebolaget, Sundsvall, Sweden

Filed Dec. 8, 1969, Ser. No. 882,881
Claims priority, application Sweden, Dec. 9, 1968, 16784/68
Int. Cl. B01d *1/26, 1/100;* D21c *11/02, 11/12, 11/14*
U.S. Cl. 159—20 4 Claims



Sulphite waste liquor is concentrated in a plural effect evaporator; the so-removed vent steam containing SO_2 is cooled at low pressure and the condensate discharged; and the resulting gas rich in SO_2 is compressed to atmospheric pressure in a vacuum pump requiring little or no sealing water.

3,675,708

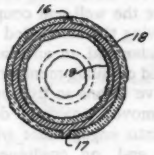
METHOD OF MAKING ACCURATE CORES

William S. Blazek, Alliance, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 16, 1970, Ser. No. 98,571
Int. Cl. B22c *9/02*
U.S. Cl. 164—35 6 Claims

Method for making shell-type cores which involves joining together a plurality of core patterns which when joined pro-

vide a hollow composite pattern, each of the patterns having ribs extending therealong. The composite pattern is invested in a ceramic mold making material to form outer and inner ceramic shells about the composite pattern. A portion of the outer shell is then removed to expose at least a portion of the



ribs. Upon melting out of the pattern, the discontinuity created by the presence of the ribs causes the outer shell to come apart and leaves the inner shell intact. The inner shell which is in the configuration of the desired core is then fired to provide a rigid shell-type core.

3,675,709

APPARATUS FOR MANUFACTURING SEMICONDUCTOR SUBSTANCES FROM GERMANIUM-SILICON OR MOLYBDENUM-SILICON

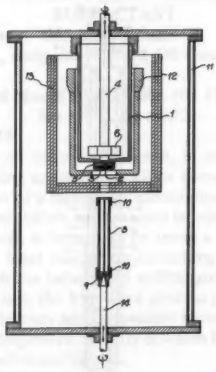
Manfred Vogerl; Hilmar Daxer, both of Munich, Bavaria; Manfred Roder, Neukatzwang/B., Nurnberg, Bavaria, and Wolfgang Dietz, Munich, Bavaria, all of Germany, assignors to Consortium Fur Elektrochemische Industrie G.m.b.H., Bavaria, Germany

Filed Aug. 14, 1969, Ser. No. 850,010

Claims priority, application Germany, Aug. 16, 1968, P 17 69 979.5

Int. Cl. B22d *25/00, 39/00*

U.S. Cl. 164—335 **4 Claims**



A method and apparatus for manufacturing semiconductor bodies from germanium-silicon or molybdenum-silicon in which a homogeneous melt of the substance under treatment is made in a melting vessel which has a capillary opening in the bottom. A vertically movable receiver, such as a crucible, is mounted beneath the capillary opening, and a piston is movable up and down in the melting vessel above said capillary opening to press drops of the molten substance in said vessel out through said opening and into the receiver where said substance is solidified in crystalline form. The method and apparatus insure that the dropping sequence of said drops causes each consecutive drop to enter the receiver before the preceding drop has fully solidified.

3,675,710

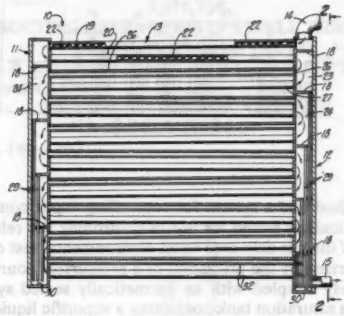
HIGH EFFICIENCY VAPOR CONDENSER AND METHOD

Roderick E. Ristow, 1441 W. 190th St., Gardena, Calif.

Continuation-in-part of Ser. No. 825,496, May 19, 1969, abandoned. This application March 8, 1971, Ser. No. 121,755

Int. Cl. F28b *1/00*

U.S. Cl. 165—1 **9 Claims**



Apparatus for and method of condensing hot vapor at increased efficiency wherein the initial flow path for hot vapor is so related to that in downstream areas as to provide relatively high velocity contact of hot vapor with the heat exchange wall, thereby to promote heat transfer. Provision for drainage of condensate at closely spaced intervals facilitates condensate removal and enables the vapor to have wiping contact with a maximum interior surface area of the heat exchange wall. If tubes of similar size are employed throughout, control of vapor velocity is obtained by selecting a varying number of tubes in parallel at different flow levels and additionally by causing the vapor to flow in a spiral path to increase its velocity and wiping contact with the heat exchange surfaces.

3,675,711

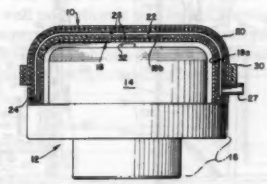
THERMAL SHIELD

Donald J. Bilinski, Dover; Lawrence S. Galowin, Upper Saddle River, and Michael Napolitano, Mendham, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed April 8, 1970, Ser. No. 26,641

Int. Cl. F28d *15/00*

U.S. Cl. 165—32 **2 Claims**

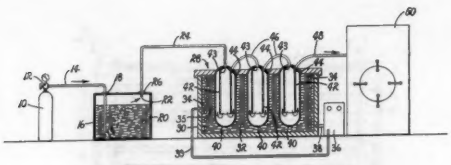


A thermal shield consisting of a pair of walls forming an enclosed space. A heat exchange fluid is disposed in the space between the walls and is maintained at a working temperature whereby it changes in phase in response to changes in temperature along one of the walls.

3,675,712
METHOD FOR CONTROLLING VAPOR CONTENT OF A GAS

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Billy G. Moser, Chico, and Robert F. Landel, Altadena, both of Calif.

Filed Dec. 16, 1969, Ser. No. 885,521
Int. Cl. F24f 3/14
U.S. Cl. 165—3 1 Claim

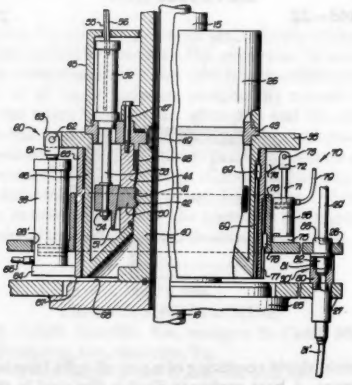


A method and a system for controlling vapor content of a gas, particularly suited for use in controlling the relative humidity of the gas delivered to an environmental test chamber, characterized by the utilization of a pressurized source of gas operatively coupled with an hermetically sealed system including a saturation tank containing a vaporific liquid, having an inundated gas intake port and an elevated gas discharge port, coupled with a condenser including a plurality of series-connected condenser units seated in a chilled bath and maintained at a selected temperature whereby a gas first is caused to become saturated with a vapor of the liquid contained within the saturation tank and then selectively dried at the condenser as selected quantities of the vapor are removed by condensation as the gas is delivered therethrough, a feature of the invention being the use of a saturation tank for completely saturating the gas with a vapor followed by a selective cooling of the gas to achieve a condensation of selected quantities of the vapor, whereby the final vapor content of the gas is a function of its temperature.

3,675,713
METHOD AND APPARATUS FOR SEPARATING SUBSEA WELL CONDUIT COUPLINGS FROM A REMOTE FLOATING VESSEL

Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Regan Forge and Engineering Company, San Pedro, Calif.

Filed March 30, 1970, Ser. No. 23,864
Int. Cl. F21b 33/035
U.S. Cl. 166—.6 4 Claims

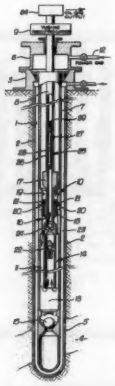


A plurality of hydraulic drive means, each including a piston, piston rod and cylinder for driving the associated piston rod relative to the associated cylinder upon introduction of hydraulic fluid under pressure, are provided at a subsea well conduit coupling having hydraulically actuated latching means therein including latching dogs cammed out of latching engagement upon pulling of the conduit upwardly when the latching means is deactivated, means are provided for mounting each of such drive means to one of the coupling members, means are provided for introducing hydraulic fluid from the floating vessel above the well and coupling into each of the drive means for driving the associated piston rod relative to the associated cylinder and an annular drive ring mounted about said one of said coupling members is connected to each of the hydraulic drive means so that upon actuation thereof the drive ring is moved coaxially down about said one coupling member into engagement with the other of said coupling members and, on continued actuation of such hydraulic drive means, said drive ring separates the coupling members by forcing them in coaxial but opposite directions, the associated latching means dogs being cammed out of latching position and the coupling members being released to allow raising of the subsea conduit and consequent release of the vessel from the subsea well. Additional hydraulic drive means are also provided in association with an additional drive ring mounted coaxially about and slidable relative to the aforementioned drive ring for disconnecting hydraulic line coupling portions connected to said additional drive ring preparatory to releasing the main coupling members and raising the associated marine conductor or conduit.

3,675,714
RETRIEVABLE DENSITY CONTROL VALVE

George L. Thompson, 3265 W. Andrews St., Fresno, Calif.

Filed Oct. 13, 1970, Ser. No. 80,340
Int. Cl. F21b 33/00
U.S. Cl. 166—224 10 Claims



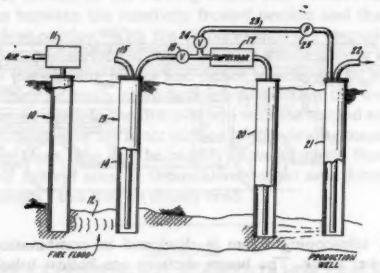
Retrievable valve apparatus for lightening oil being gas lifted through a tubing string. The apparatus includes a valve body having a fishing neck which projects upwardly within the tubing string and valve means proper carried by the body for selectively communicating the tubing string interior with a pressurized gas supply to inject gas into the oil upwardly past the fishing neck in response to a predetermined pressure of oil lifted in the tubing string above the apparatus, the valve body being provided with a port to pass the pressurized gas into the body when the body is selectively positioned within the string.

3,675,715

PROCESSES FOR SECONDARILY RECOVERING OIL

Frank N. Speller, Jr., Tyler, Tex., assignor to Forrester A. Clark, Boston, Mass.

Filed Dec. 30, 1970, Ser. No. 102,824
Int. Cl. F21b *43/24*
U.S. Cl. 166—256 6 Claims



A secondary recovery process for oil wet sands using underground combustion to produce a makeup effluent gas containing carbon dioxide. The effluent gas is mixed with a wet casing head gas enriched by ethane plus hydrocarbons and the mixture is injected into the reservoir at relatively low pressures to promote oil flow toward a production well. The enriched injected gas mixture reduces the oil's adhesion to the sand and promotes oil flow. The production well is maintained under a vacuum pressure so as to pull the injected mixture through the formation. The mixture is recovered and reinjected. The production well vacuum pulls ethane plus hydrocarbons from the oil at the formation face to enrich the casinghead gas.

3,675,716

HEAT-STABLE CALCIUM-COMPATIBLE WATERFLOOD SURFACTANT

Robert F. Farmer, III, and Jimmie B. Lawson, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed March 9, 1970, Ser. No. 17,898
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 5 Claims

A waterflood oil recovery process, in which a surfactant system (comprising an aqueous, oil or two-phase liquid solution or dispersion of a mixture of petroleum sulfonate and alkoxylated alcohol sulfate surfactants) is injected into a reservoir to displace oil, is improved by using a sulfate surfactant that contains at least one chain-branching substituent on a carbon atom alpha or beta to the sulfate group. In a reservoir that is relatively hot, the improved process provides good oil-displacement efficiency and polyvalent metal ion compatibility in addition to improved stability towards hydrolytic decomposition of the sulfate surfactant.

3,675,717

METHOD OF GRAVEL PACKING WELLS

William C. Goins, Jr., and Bruce B. McGlothlin, both of Houston, Tex., assignors to Gulf Research & Development Company

Filed Jan. 13, 1971, Ser. No. 106,238
Int. Cl. E21b *43/04*
U.S. Cl. 166—278 11 Claims

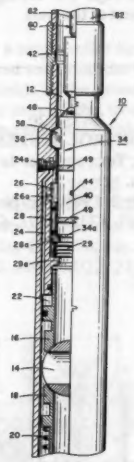
A method of gravel packing a well in an overpressured formation in which a gravel-carrying liquid is formed by mixing finely divided solid particles of a weighting agent with the liquid. The weighting agent is either soluble in, or can be made soluble by, a liquid that has no appreciable effect on the gravel. Gravel is suspended in the mixture of gravel-carrying liquid and weighting agent and the resultant suspension used in conventional techniques for forming gravel packs. After formation of the gravel pack, a liquid is passed through the gravel pack to dissolve the weighting agent and remove it from the gravel pack. Calcium carbonate and iron oxide are two of the preferred weighting agents that can be used. Hydrochloric acid is a preferred liquid for removal of those weighting agents from the gravel pack.

3,675,718

CONDUCTING OPERATIONS IN A WELL THROUGH A NORMALLY CLOSED VALVE

William E. Kanady, Houston, Tex., assignor to Esso Production Research Company

Filed Sept. 11, 1970, Ser. No. 71,553
Int. Cl. F21b *23/04*
U.S. Cl. 166—297 10 Claims



An operation is conducted in a well below a normally closed valve therein having a full open bore therethrough which involves running a tubular member having a passageway therethrough into the well from a reel at the earth's surface and releasably connecting the tubular member to the normally closed valve. Fluid pressure introduced through the tubular member from the earth's surface or before the valve is introduced to the well is provided to open the valve and thereafter a well operation is performed through the full open bore and below the valve. The well operation may include a workover operation such as acidizing, cementing, stimulating, sand consolidation, perforating, and the like.

3,675,719

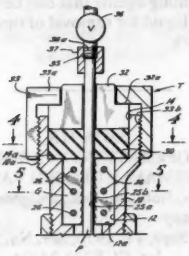
TUBING HANGER ASSEMBLY AND METHOD OF USING SAME

Damon T. Slator, and Archie W. Peil, both of Houston, Tex.

Filed Oct. 16, 1970, Ser. No. 81,461
Int. Cl. E21b *33/03*
U.S. Cl. 166—297 4 Claims

A tubing hanger assembly and method of using same, wherein a continuous tubing having a smooth external surface

which is to be left in a well after insertion is supported by the hanger assembly so that subsequent operations may be performed in the well through the tubing without leaving the usual wellhead equipment at the well.



3,675,720

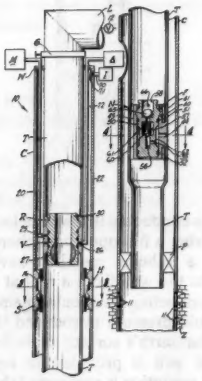
WELL FLOW CONTROL SYSTEM AND METHOD

Phillip S. Sizer, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed July 8, 1970, Ser. No. 53,223

Int. Cl. E21b *43/01, 43/12*

U.S. Cl. 166—314 **17 Claims**



A well flow control system for producing high volumes of fluids from a well formation, the system having a flow conduit or conductor with a safety valve therein responsive to predetermined conditions of flow for shutting off flow through the flow conductor and operable under control from the surface. A means for injecting chemical corrosion inhibitors and other treating fluids into the well fluid is provided which also affords means for loading or killing the well in the event of damage to the surface connections of the well, or other conditions of need. Complete automatic shut-off is provided to prevent the well flowing wild, all controls are subsurface, and are removable by flexible line operated tools through the flow conductor.

3,675,721

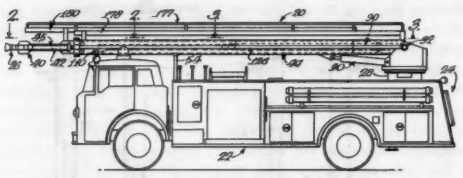
FIRE FIGHTING APPARATUS WITH TELESCOPING BOOM

Kenneth H. Davidson, and Carrol V. Morris, both of St. Joseph, Mo., assignors to Snorkel Fire Equipment Company

Filed Oct. 26, 1970, Ser. No. 83,925

Int. Cl. A62c *27/00*

U.S. Cl. 169—24 **11 Claims**



A telescoping boom is disclosed in combination with a pumper truck. The boom sections are hollow tubular members, and floating guide shoes mount the outer boom section for movement relative to the inner boom section. A nozzle is provided at the end of the outer boom section, and telescoping conduit sections are secured in external relationship to be boom for conveying water to the nozzle. Primary control means is provided at the rear of the truck for remotely controlling the boom and nozzle. Hydraulically actuated cable means are connected between the boom sections for extension and retraction of the outer boom section. Secondary control means is provided adjacent the end of the outer boom section for the nozzle, and a telescoping ladder is associated with the boom to provide access to the secondary control means. The telescoping ladder also enables a fireman to carry out normal fire fighting and rescue activities in elevated and difficult to reach positions. A flexible electrical cable and flexible hydraulic conduits are mounted within the boom structure for providing power to the control means at the end of the outer boom section, and the cable and conduits are movable as the outer boom section is extended.

3,675,722

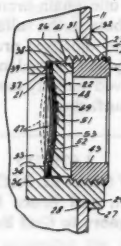
PRESSURE INDICATOR

Mark E. Balmes, Sr., Chamblee, Ga., assignor to General Fire Extinguisher Corporation, Northbrook, Ill.

Continuation of Ser. No. 794,866, Jan. 29, 1969, abandoned. This application April 5, 1971, Ser. No. 131,162

Int. Cl. A62c *11/00*; G01l *19/12*

U.S. Cl. 169—30 **15 Claims**



An inexpensive and yet highly reliable device for indicating when the pressure in a receptacle is above or below a predetermined value comprises a housing means, a diaphragm means in the housing means, the diaphragm means having first and second side surfaces and a translucent viewing means having an inner surface, at least a portion of which is adjacent to the second surface of the diaphragm means. The first side sur-

face of the diaphragm is adapted to be in pressure communication with the receptacle so the the diaphragm means may be movable between a first position in which the pressure is below a predetermined value and a second position in which the pressure is above a predetermined value. The inner surface of the viewing is relatively frosted except for at least one portion or area which is relatively clear so that when the diaphragm is in the second position it will be in contact with the inner surface of the viewing means and obscure the differences between the relatively frosted portion and the relatively clear portion. With the diaphragm in the second position the second surface of the diaphragm will be clearly visible through the viewing means and hence indicia on the second surface may be easily read. In one embodiment the word "full" may be used. In the first position with the second surface out of contact with the inner surface of the viewing means the relatively clear area will be readily distinguishable from the relatively frosted area. If the relatively clear area forms the word "empty" this may be clearly read.

3,675,723

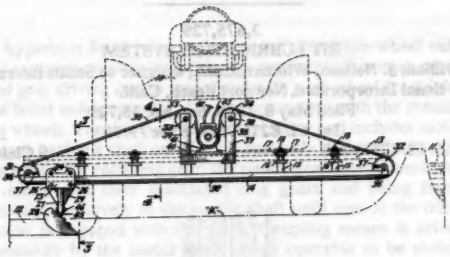
FURROW EXTENDING ATTACHMENTS FOR TRACTORS

John A. Yaklich, R. R. # 1 Box 108, Avondale, Colo.

Filed Nov. 2, 1970, Ser. No. 85,869

Int. Cl. A01b *35/16*

U.S. Cl. 172—100 **2 Claims**



An elongated frame bar is removably attached to the conventional implement drag bar or the rear cultivator bar of a tractor so as to successively align with the terminations of a plurality of parallel spaced-apart row irrigation furrows. A carriage, provided with a ditch forming plow, is mounted so as to be longitudinally moved back and forth along said frame bar by a roller chain propelled by a reversible motor so that the ditch forming plow will enter and extend the length of each row irrigation furrow as the frame bar successively aligns therewith.

3,675,724

SELF PROPELLED LAND CLEARING AND PLOWING APPARATUS

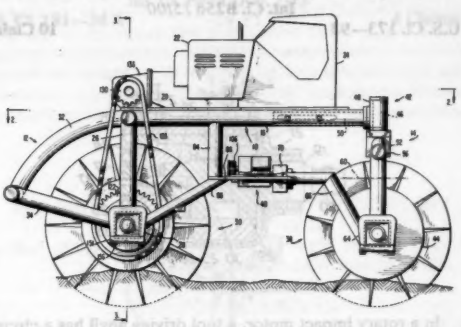
Arthur F. Schneider, 4107 Turkey Creek Court, Annandale, Va.

Filed June 11, 1969, Ser. No. 832,048

Int. Cl. A01b *33/00;* **A21b** *21/02*

U.S. Cl. 172—116 **24 Claims**

The machine includes a frame carrying a pair of independently driven front rollers rotatable about a common axis, each carrying a set of chopper blades spaced thereabout. The frame also carries a rear roller having a pair of chopper blade sets in side-by-side relation. The blades of each set have common pitch angles with the pitch angles of the blades in the side-by-side sets extending in opposite directions. The front and rear blade sets are longitudinally aligned with the blades thereof having opposite pitch angles, thereby providing a cross chopping action as the machine advances over the ground. The rear roller is carried by a yoke mounted for pivotal movement about a vertical steering axis and a longitudinal axis to permit canting of the rear roller relative to the front roller and frame. A steering motor is provided on the yoke and drives along an arcuate track on the frame to rotate the rear roller about the vertical axis. In another form, the pair of front rollers are replaced by a single roller having arcuate blades, the latter being configured such that the blade tips transcribe the arcs of looped trochoids in the ground with the leading and trailing edges of the arcs of the trochoids intersecting such that a plowing or tilling action is provided.



3,675,725

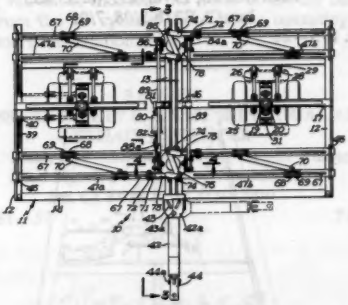
DISC IMPLEMENT

Henry F. Schultz, Route 1, Welcome, Minn.

Filed May 27, 1970, Ser. No. 40,848

Int. Cl. A01b *63/22, 21/08, 23/04*

U.S. Cl. 172—245 **3 Claims**



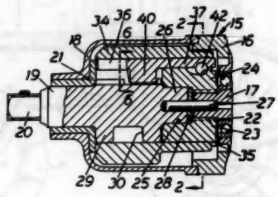
A disc implement includes a frame having retractable transport wheels thereon and having a plurality of tool bars fixedly mounted thereon. These tool bars each include tool bar sections extending laterally from the longitudinal center line of the implement and extending substantially normal to the direction of draft or travel of the implement. Each tool bar section has a plurality of spaced apart concavo-convex discs connected thereto by vertically arranged tool standards, the tool standards being rotatable about their respective longitudinal axes to selectively change the angle of the disc with respect to the direction of draft of the implement. A linkage mechanism is interconnected to the tool standards to selectively shift the same by a hydraulic ram. The discs on one side of the frame are oppositely angled with respect to the discs on the other side of the frame to thereby substantially balance the side draft during operation of the implement.

3,675,726

ROTARY IMPACT MOTOR

Knut Christian Schoeps, Nacka, and Klas Johan Astrom, Danderyd, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jan. 5, 1971, Ser. No. 104,045
Claims priority, application Sweden, Jan. 14, 1970, 421
Int. Cl. B25d 15/00
U.S. Cl. 173—93 10 Claims



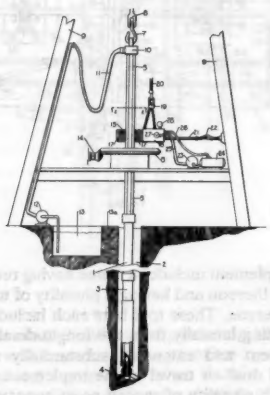
In a rotary impact motor, a tool driving anvil has a circumferential groove forming an axial cam rise. The rotary hammer carries an impact dog for conjoint rotation. The impact dog is movable axially in the hammer between impact and release positions relative to the anvil. The impact dog is power biased towards the release position and has a follower lug which engages the anvil groove. During relative rotation between the hammer and the anvil the follower lug is forced by the cam rise to move axially against the power bias to deliver a rotational impact against an impact surface in the anvil groove.

3,675,727

APPARATUS AND METHOD FOR GOVERNING THE OPERATION OF DOWN-HOLE EARTH BORING MOTORS

Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind.

Filed Oct. 23, 1970, Ser. No. 83,455
Int. Cl. E21b 3/08, 7/00
U.S. Cl. 175—26 12 Claims



Apparatus and method for governing the operation of down-hole earth boring motors in which braking forces are applied to a rotating drill string in accordance with the reactive torque generated in the drill string by the down-hole motor driving the drill bit, the weight load on the drill bit being varied in accordance with variations in the speed of drill string rotation.

3,675,728

SLIM HOLE DRILLING

Joseph H. Faulk, Dallas; Lloyd R. Kern, Irving, and Graham E. King, Dallas, all of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,405
Int. Cl. E21b 17/00
U.S. Cl. 175—57 12 Claims

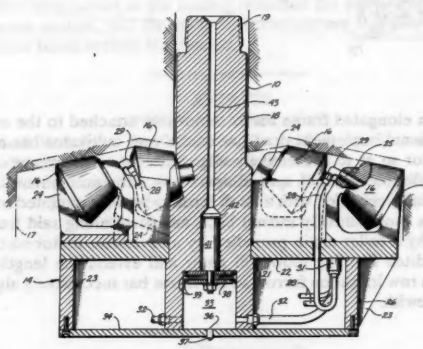
A method and apparatus for employing slim hole drilling techniques and avoiding key seat problems, particularly when moving a drill string into or out of the wellbore.

3,675,729

BIT LUBRICATION SYSTEM

William J. Neilson, Whittier, Calif., assignor to Smith International Incorporated, Newport Beach, Calif.

Filed May 8, 1970, Ser. No. 35,729
Int. Cl. E21b 9/08; F16c 19/00
U.S. Cl. 175—228 9 Claims



A raise type of earth boring drill for drilling upwardly from an adit or other tunnel is described. The bit is rotated by a drill pipe in a vertical pilot hole, and bores through the earth by means of rolling cutters mounted on the drill bit. Lubrication for the bearings supporting the cutters is provided from a reservoir of lubricant through lubricant manifolds to the individual cutters. A piston in the reservoir is intermittently actuated by pneumatic pressure for giving each of the bearings a small injection of lubricant, thereby obviating any need for complex and troublesome metering systems in the drill bit.

ERRATUM

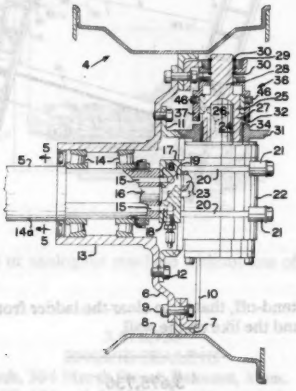
For Class 179—84 VF see:
Patent No. 3,675,513

3,675,730

VEHICLE WHEELED DRIVING MECHANISM

Edward S. Kontranowski, Bay City, Mich., assignor to Aerospace America, Inc., Bay City, Mich.

Filed May 7, 1970, Ser. No. 35,417
Int. Cl. B60k 7/00
U.S. Cl. 180—55 10 Claims



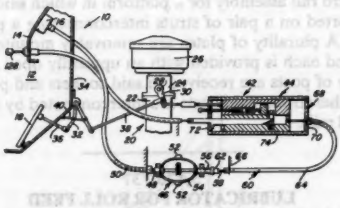
Apparatus for driving each wheel of a multiple wheel vehicle comprises a plurality of ring gears mounted on each wheel and gear driving means associated with each wheel for driving the latter independently of or in conjunction with the remaining wheels. The driving means is reversible and includes motor means having a shaft on which is rotatably mounted one driving pinion for each ring gear, the pinion gears being constantly in mesh with their associated ring gears and being freely rotatable relatively to the motor shaft until one or the other pinion is engaged with the shaft. Coupling means is driven constantly by the motor shaft and is operable to be shifted from a neutral position in which neither pinion is driven to a driving position in which one or the other of the pinions is driven.

3,675,731

VEHICLE SPEED CONTROLLED THROTTLE GOVERNOR

Walter Stopera, 125 Diamond Street, Box 116, Rayland, Ohio

Filed Dec. 1, 1969, Ser. No. 881,120
Int. Cl. B60k 27/04
U.S. Cl. 180—109 9 Claims



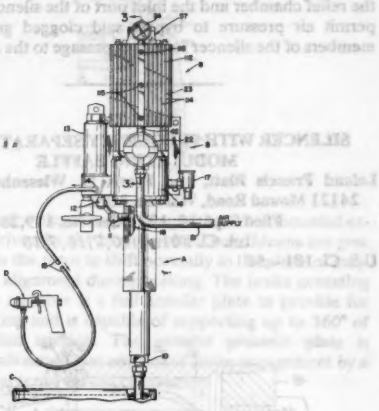
A motor vehicle throttle control operative to limit shifting of the throttle control between open and closed positions to a predetermined range considerably less than the full range of movement thereof between fully open and fully closed positions. The throttle control is operative to vary the effective limits of the predetermined range toward the fully open and fully closed positions of the throttle control in response to increases and decreases in vehicle speed.

3,675,732

MUFFLER FOR PNEUMATIC MOTOR

Samuel R. Rosen, Lorain; Alvin A. Rood, Westlake, and Donald R. Scharf, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Division of Ser. No. 809,235, March 21, 1969. This application May 17, 1971, Ser. No. 144,124
Int. Cl. F01n 1/08, 1/22
U.S. Cl. 181—36 A 4 Claims



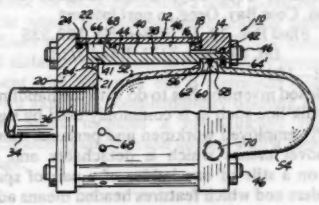
A hydraulic pump and double acting air motor therefor including means for controlling the inlet and exhaust of air to and from the opposite sides of the piston in the air cylinder. A pilot valve operated by the air piston controls one operating valve for the cylinder and a pilot relay valve. The pilot relay valve controls another operating valve which is in reverse phase with respect to the first operating valve. A muffler which inhibits ice formation is operatively associated with the operating valves for muffling the noise of the air being exhausted from the air cylinder through the operating valves with minimal accumulation of ice.

3,675,733

PRESSURE SAFETY RELEASE INDUSTRIAL AIR EXHAUST SILENCER

Leland F. Blatt, 790 Shoreham Road, Grosse Pointe Mich.

Filed March 17, 1971, Ser. No. 125,167
Int. Cl. F01n 1/10, 1/20, 3/00
U.S. Cl. 181—37 7 Claims



An air exhaust silencer comprises a barrel which has a piston head, the barrel is contained for reciprocation within a cylinder and is normally retained in the cylinder in an inwardly retracted position so as to permit air exhaust through the silencer structure supported within the barrel and which embodies a pair of gas permeable frequency distorters adapted to muffle the noise of the exhaust air to below a predetermined

maximum noise level; the barrel containing cylinder of the silencer is provided with a plurality of relief ports which are in open communication with a normally closed off relief chamber in front of the piston head; regulated fluid pressure retaining means are employed to normally retain the barrel in the retracted position; upon build-up of back pressure in the silencer assembly, due to clogging of the gas permeable members of the silencer, the increased air pressure through the silencer becomes sufficient to move the barrel of the silencer out of the cylinder overcoming the magnitude of the fluid pressure retaining means to establish communication between the relief chamber and the inlet port of the silencer to thereby permit air pressure to bypass said clogged gas permeable members of the silencer for direct passage to the atmosphere.

3,675,734

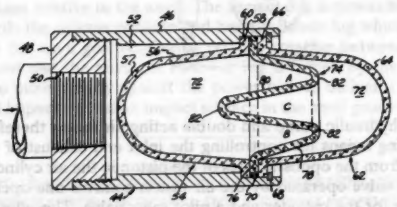
SILENCER WITH FREQUENCY SEPARATING AND MODULATING BAFFLE

Leland Francis Blatt, and Frank H. Wiesenhofer, both of 24121 Mound Road, Warren, Mich.

Filed Sept. 10, 1971, Ser. No. 179,284

Int. Cl. F01n *1/10, 7/16, 7/18*

U.S. Cl. 181—56 **6 Claims**



An air exhaust silencer comprises a housing having an inlet and an outlet with opposed porous dome shaped noise reducing members and a porous frequency separating and modulating baffle disposed within and between said noise reducing members, contoured and of such undulating shape and form extending into at least one of said dome shaped members so as to have a total surface area in excess of the cross sectional area of opening between said dome shaped members, for reducing and modifying high pressure sound frequencies and reducing back pressure.

3,675,735

LADDER MOUNTING MEANS FOR CHALK LINE

Loren C. Bailey, Coos Bay, Oreg., assignor to James C. Thompson, Coos Bay, Oreg., a part interest

Filed Dec. 29, 1970, Ser. No. 102,335

Int. Cl. E06c *5/32;* **B44d** *3/38*

U.S. Cl. 182—129 **5 Claims**

The disclosed invention has to do with the handling of a wall marking chalk line such as is commonly used by sign painters and similarly employed workmen and pertains, more particularly, to novel means which is detachably and adjustably bracketed on a stile of one ladder of a pair of spaced companion ladders and which features headed means adjacent the wall surface to which one end of a chalk line is attached. The invention enables one man, working alone, to ascend the ladder adjacent the free end of the chalk line and to snap a guide line on the building wall. A pair of cooperating brackets provide the novel adapter means. This means is detachably mounted on one stile of the ladder. One of the brackets serves to support the median portion of a shiftable rod. The forward end of one embodiment of the rod is provided with a spring-loaded head to which one end of the chalk line is tied and thus anchored. In a second embodiment the headed end of the rod is stationary and bears against the wall surface to function as

the ladder stand-off, that is, to clear the ladder from projecting neon signs and the like on the wall.

3,675,736

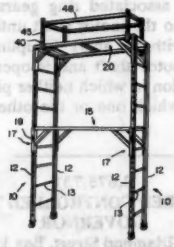
GUARD RAIL ASSEMBLY FOR A PLATFORM

William Clark Roggie, Indianapolis, Ind., assignor to Baker-Roos, Inc., Indianapolis, Ind.

Filed May 3, 1971, Ser. No. 139,616

Int. Cl. E04g *1/26*

U.S. Cl. 182—113 **4 Claims**



A guard rail assembly for a platform in which said platform is supported on a pair of struts interconnecting a pair of leg frames. A plurality of plates are removably mounted on said struts and each is provided with an upwardly open socket. A plurality of posts are received in said sockets and project upwardly therefrom. Said posts are interconnected by a plurality of guard rails.

3,675,737

LUBRICATOR FOR ROLL FEED

Stephen M. Chmela, 1514 Mark Drive, Mount Prospect, Ill.

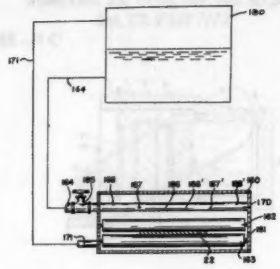
Division of Ser. No. 722,056, April 17, 1968, Pat. No. 3,517,872. This application June 22, 1970, Ser. No. 47,967

Int. Cl. F16n *7/24*

U.S. Cl. 184—17 **2 Claims**

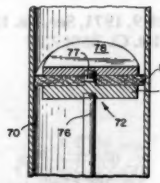
A unitary roll feed for feeding web material to a machine having a simplified manually operable means to permit feed length adjustment while the machine is in operation. A pulsating brake, automatic and manual roll lifter, and oiler are pro-

vided in the same compact housing. Since all of these features are in a single unit, it may be universally applied to any type of



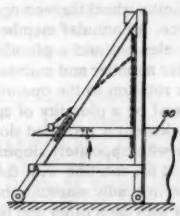
press, punch or analogous machine without loss of any one of the features.

3,675,738
ENGINE SEALING
Vannevar Bush, 304 Marsh Street, Belmont, Mass.
Filed March 2, 1970, Ser. No. 15,462
Int. Cl. F01b 31/10
U.S. Cl. 184—18 8 Claims



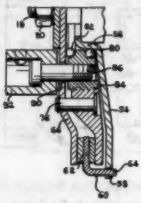
Hot gas engines operating at constant maximum temperatures are sealed with solid lubricant unsplit piston rings. Bellows seal rods within pressurized crankbases.

3,675,739
LIFT HAVING SELF-FOLDING PLATFORM
Atwood E. Erlinder, 12221 S. Indiana Avenue, Palos Heights, Ill.
Filed July 10, 1970, Ser. No. 53,872
Int. Cl. B66b 9/00
U.S. Cl. 187—1 6 Claims



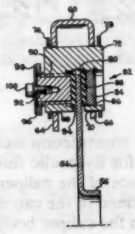
A lift which contains a self-folding platform is disclosed. The rear of a truck may be equipped with the lift to provide a loading and unloading device as well as a tailgate for the truck.

3,675,740
BICYCLE DISC BRAKE
Karl Frei, Horseheads, and Edwin Elliott Hood, Elmira, both of N.Y., assignors to The Bendix Corporation
Filed March 29, 1971, Ser. No. 129,091
Int. Cl. B62l 5/06
U.S. Cl. 188—26 10 Claims



A disc brake for bicycles operating with a rotor mounted externally and driven by the bicycle wheel hub. Means are provided to enable the rotor to shift normally to the plane of rotation to permit alignment during braking. The brake actuating pressure plate member is a full annular plate to provide for balanced braking and is capable of supporting up to 360° of working friction surface. The annular pressure plate is mechanically advanced into and out of brake engagement by a high gain helical screw thread connection.

3,675,741
BICYCLE DISC BRAKE
Karl Frei, Horseheads, and Edwin Elliott Hood, Elmira, both of N.Y., assignors to The Bendix Corporation
Filed March 29, 1971, Ser. No. 129,090
Int. Cl. B62l 5/06
U.S. Cl. 188—26 7 Claims

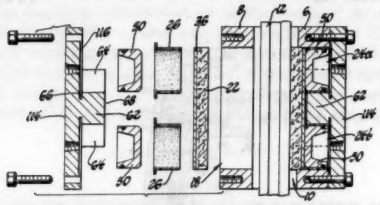


A disc brake for bicycles having a rotor mounted externally on a bicycle wheel hub and a brake housing mounted in a bracket affixed to the wheel axle wherein the brake housing has limited slidable movement in the support bracket to permit alignment with the rotor but is restrained from rotating about its own axis by a complementary opening and housing shape. The brake includes a mechanically manipulated threaded actuator to apply brake motion with a high mechanical advantage.

3,675,742
DISC BRAKE CALIPER ASSEMBLY
Tom H. Thompson, 29210 Point-O-Woods Place, Southfield, Mich.
Filed April 16, 1970, Ser. No. 29,116
Int. Cl. F16d 55/228
U.S. Cl. 188—72.5 13 Claims

A disc brake caliper assembly including a main body portion having a peripheral base portion and a pair of leg portions extending from the base portion which are spaced from each

other to define a slot for receiving a rotatable brake disc. A bore or opening extends through at least one leg portion and a cap member is detachably mounted on the portions, the cap members each having a closure portion which is spaced from the slot and overlies one end of the bore. The cap member



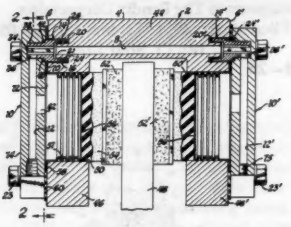
cooperates with the bore and the leg portion to define at least one chamber for receiving hydraulic brake actuators operable to extend a brake pad from the other end of the bore into the slot for braking engagement with a brake disc received in the slot.

3,675,743

HYDRAULIC DISC BRAKE CONSTRUCTION

Tom H. Thompson, 29210 Point-O-Woods Place, Southfield, Mich.

Filed July 30, 1970, Ser. No. 59,538
Int. Cl. F16d *55/228*
U.S. Cl. 188—72.5 **21 Claims**



Hydraulic Disc Brake construction including a caliper body formed with a passage for hydraulic fluid. A cap member is mounted on a side surface of the caliper body and a passage for hydraulic fluid is formed in the cap member. A fluid connector projects between the caliper body and cap member to provide fluid communication between the caliper body passage and the passage in the cap member. The fluid connector has an endless side wall that projects into the main body with a loose fit and has an elastomeric sealing member bonded to its rim, the sealing member being compressed against the main body to provide a sealed fluid connection between the cap member and main body. The fluid connector may be mounted on the end cap prior to assembly of the end cap to the caliper body to serve as a locating member.

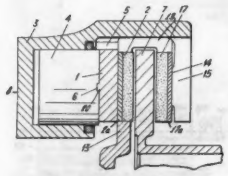
3,675,744

SPOT-TYPE DISC BRAKE

Hans Albert Beller, Budingerstr, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,656
Claims priority, application Germany, Feb. 27, 1970, P 20 09 260.8
Int. Cl. F16d *55/00*
U.S. Cl. 188—73.6 **6 Claims**

A spot-type disc brake utilizing a floating caliper wherein two brake shoes are applied to opposite faces of the brake disc and an intermediate piece is located between the backing plate of one of the brake shoes and an actuating piston which is maintained in one arm of the floating caliper. The caliper arm is formed with an aperture and the intermediate piece is



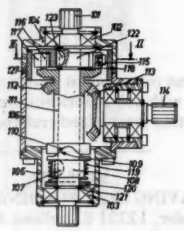
formed with a projection which cooperates with a depression formed in the brake piston thereby allowing easy removal of the intermediate piece from the disc brake. This in turn allows the easy replacement of the brake shoes which are readily exposed.

3,675,745

DOUBLE ACTING FREE WHEEL

Marcel Pierre Alexis Bouhot, 35 Avenue de General Serrail, Paris, France

Filed March 9, 1971, Ser. No. 122,306
Int. Cl. B60t *7/12*
U.S. Cl. 188—134 **1 Claim**



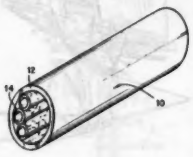
A torque limiting device for stopping a rotating operating shaft when a resisting torque exerted thereon exceeds a predetermined value. A housing having a stationary bowl mounted therein is provided; the operating shaft is mounted for rotation in the housing and extends through a tubular element which has a pinion wheel thereon operatively connected to an actuator device. An annular member is provided at one end of the tubular element and a plurality of rollers are arranged in the annular member and maintained in contact with a cam mounted for rotation to the operating shaft and out of contact with the bowl by a plurality of springs. At the other end of the tubular element is provided sloping surfaces which are shaped to mate with oppositely sloping surfaces provided on a driver mounted for rotation with the operating shaft. A spring is provided to normally maintain the sloping surfaces in mating engagement with each other and is calibrated so that if the resisting torque acting on the operating shaft exceeds a predetermined value, the sloping surfaces move out of mating engagement thereby displacing the cam relative to the annular member to wedge the rollers into engagement with bowl and bring the shaft to a stop.

3,675,746

IMPACT ENERGY ABSORBER

Alvin R. Irvine, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 23, 1970, Ser. No. 83,583
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C 2 Claims



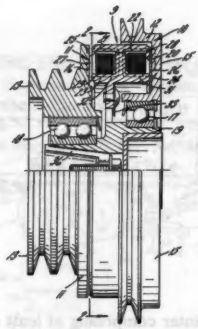
This invention relates to a deformable impact energy absorber consisting of a plurality of unattached tubes confined within a larger tubulation. During an impact loading the resistance to deformation increases with deformation.

3,675,747

TWO SPEED MAGNETIC CLUTCH DRIVE

John A. Obermark, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Wis.

Filed Nov. 9, 1970, Ser. No. 87,840
Int. Cl. F16d 27/06, 27/12, 21/02
U.S. Cl. 192—48.2 4 Claims



In the two speed magnetic clutch drive illustrated, two magnets having oppositely facing pole ends are rigid with each other and axially shiftable selectively into gripping engagement with one or the other of axially fixed disk armatures driven at different speeds. The magnet unit is supported from a driven shaft through angularly spaced and tangentially extending leaf springs which provide a frictionless mounting for the magnet unit and, as an incident to engagement of either clutch, are stressed to provide the force for separating the magnet unit from the armature disk when the clutch magnet is deenergized.

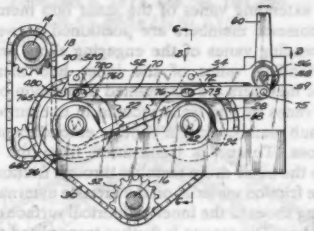
3,675,748

SINGLE LEVER SELECTIVELY ACTUATED FORWARD AND REVERSE CLUTCHES

Quinten A. Hansen, 4338 Hy 38, Franksville, Wis.

Filed Oct. 12, 1970, Ser. No. 79,742
Int. Cl. F16d 21/04, 13/42; G05g 9/00
U.S. Cl. 192—51 6 Claims

Clutches controlling motion in opposite directions nave actuators movable oppositely, said actuators being moved by operating linkage from a control lever which includes lost motion designed to actuate one of the actuators only in one direction of lever oscillation and the other actuator in the opposite direction of lever oscillation. In a special arrangement,



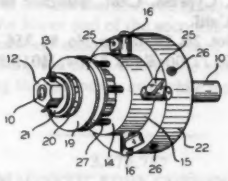
the driven part is locked against movement in either direction by manipulation of the normally stationary linkage to cause both disk packs to be engaged simultaneously.

3,675,749

QUICK DISCONNECT CLUTCH

Vernon Olson, 1961 Bartlett Avenue, Milwaukee, Wis.

Filed Jan. 12, 1971, Ser. No. 105,857
Int. Cl. F16d 43/20
U.S. Cl. 192—56 R 7 Claims



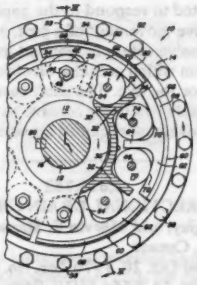
A clutch has two spring biased plates, normally urged together by the spring. Detents on one plate are captured by lugs or latches on the other plate. When a jerk occurs the capture is lost, and the detents move out of their capture position.

3,675,750

FLEXIBLE CENTRIFUGAL CLUTCH COUPLING

John Wright, Baltimore, Md., assignor to Koppers Company, Inc.

Filed Dec. 8, 1970, Ser. No. 96,019
Int. Cl. F16d 23/10
U.S. Cl. 192—105 BA 14 Claims



The centrifugal clutch coupling has an inner hub member with radially extending elongated vanes, and an outer drum

member with an inner cylindrical surface. Engaging shoes are positioned between the inner hub member and outer drum member and have arcuate external surfaces with a friction material secured thereto. The engaging shoes have inwardly extending elongated vanes positioned between the radially outwardly extending vanes of the inner hub member. Elongated elastomeric members are positioned between the inwardly extending vanes of the engaging shoes and the outwardly extending vanes of the inner hub member. The elastomeric members are maintained in position between the elongated vanes by end walls secured in one embodiment to the inner hub member and in another embodiment to the engaging shoes. Torque is transmitted from the inner hub member to the outer drum member through frictional engagement of the friction material on the arcuate external surface of the engaging shoes to the inner cylindrical surface of the outer drum member. The torque is further transmitted through the elastomeric members. In another embodiment, an elastomeric member having an elliptical configuration in section is secured to an engaging shoe and positioned between the radially extending vanes of the inner hub member. Torque is transmitted through the elliptically shaped elastomeric member without the engaging shoe having inwardly extending elongated vane members. Still another embodiment includes elastomeric members preloaded to exert a predetermined amount of force between the inner hub member and the engaging shoes.

3,675,751

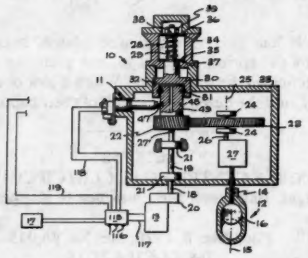
TORQUE OR MOTION RESPONSIVE APPARATUS

William D. Fortner, Cypress, Calif., assignor to The Cavins Co., Long Beach, Calif.

Filed Oct. 20, 1970, Ser. No. 82,356

Int. Cl. F16d *71/00*; F16k *31/04*; H01h *3/16*

U.S. Cl. 192—150 **11 Claims**



A device adapted to respond to the application of excessive torque or excessive movement of a part, and including a shaft which upon excessive rotary movement in opposite directions will displace a cam which actuates electrical switches for controlling a motor or the like. The shaft carries two cam drivers which are adjustable rotatively relative to the shaft to vary the extent of shaft movement required for actuation of the cam.

3,675,752

DIRECTIONAL GRAIN CHUTES

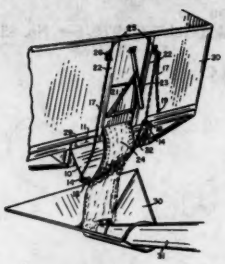
Norman R. Quigley, and Marvin E. Hansen, both of Rouleau, Saskatchewan, Canada

Filed Oct. 20, 1970, Ser. No. 82,331

Int. Cl. B65g *11/10*; B60p *1/00*

U.S. Cl. 193—5 **2 Claims**

A rectangular-shaped apron of flexible material having one side fastened across the rear of a grain truck and directly under the end gate thereof, while the free corners of the apron are adjustable suspended from brackets on the truck wall, and such that the apron can be flexed to form a chute and direct



grain pouring from under the opened end gate in the direction desired.

3,675,753

HIGH-SPEED PRINTER

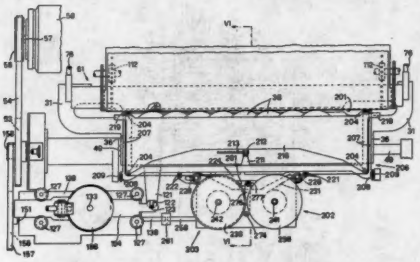
Vincenzo Perucca, Ivrea, Italy, assignor to Ing. C. Olivetti SC., S.p.A., Ivrea, (Turin), Italy

Filed April 23, 1970, Ser. No. 31,331

Claims priority, application Italy, April 23, 1969, 51547 A/69

Int. Cl. B41j *23/04*

U.S. Cl. 197—18 **13 Claims**



A high-speed printer comprising at least one type-bearing element on which there is arranged at least one series of characters, means adapted to move the type-bearing element continuously in a substantially horizontal plane so as to cause each character to travel along a closed path, a hammer adapted to effect the printing of the characters of the element on the fly and means for shifting the type-bearing element and the hammer with respect to a paper support for a distance corresponding to a character space while the first said means moves the series of characters past the hammer, which prints a character on the passage of each of the series of characters when there are more than one series.

3,675,754

CONVEYORS INTENDED TO CARRY DIRECTLY OBJECTS OR OBJECTS MOUNTED ON SUPPORTS

Jean Etienne Villemaud, Les Sagnes, 87, Saint-Priest Taurion, France

Filed Oct. 30, 1970, Ser. No. 84,990

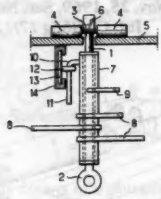
Claims priority, application France, Oct. 31, 1969, 6937605; Nov. 3, 1969, 6938122; June 5, 1970, 7020836

Int. Cl. B65g *47/00*

U.S. Cl. 198—20 **9 Claims**

This conveyor intended for the transport of objects possibly mounted on supports comprises a succession of standard

rectilinear transport elements, each controlled by a reduction drive motor and each including at least two pulleys; a transmission element such as a chain or a belt, the said transmission element being provided with gripping members designed to catch hold of the objects to be transported or their supports, the said transmission element being passed round the two said



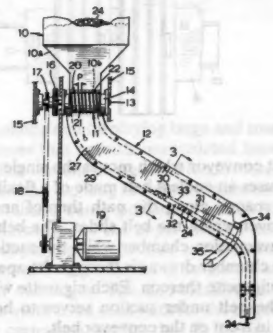
pulleys; guide rails for the transmission element; at least one supporting surface intended to bear the weight of the object and its support; and means of transfer able to unfasten the objects or their supports from a standard rectilinear transport element and to engage them with another standard rectilinear element of the conveyor.

3,675,755

ORIENTING AND FEEDING SMALL DISCS

Charles Douglas Hopwood-Jones, Verdun, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed May 4, 1970, Ser. No. 34,351
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 R **7 Claims**



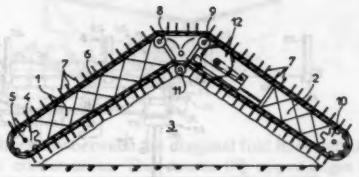
A method and apparatus for orienting and feeding small discs of uniform thickness and diameter, in which a quantity of the discs is fed onto a pair of parallel, helically ridged rollers spaced apart to form a horizontal slot having a width greater than the thickness of one of the discs but substantially less than twice its thickness. The helical ridges on both rollers are convoluted in the same direction. The rollers are rotated in opposite directions with their surfaces moving upwardly adjacent the slot. Passage means are located beneath the slot to receive the discs passing between the rollers and to maintain their orientation.

3,675,756

GANTRY SCRAPER CONVEYOR

Louis Nass, Kingersheim, France, assignor to Societe Anonyme dite AMECO S.A., Kingersheim, France

Filed Jan. 6, 1971, Ser. No. 104,396
Int. Cl. B65g *15/30, 65/28*
U.S. Cl. 198—36 **9 Claims**



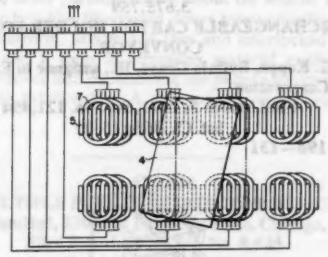
A gantry scraper conveyor for storing or picking up material in a heap comprising in a substantially inverted V-shaped frame structure a primary arm and a secondary arm supporting a driven double endless chain resting on two opposite slopes of the heap of the material to be handled with a continuous scraper chain running firstly upwards along the primary arm and then downwardly along the secondary arm. The primary arm has a driving drum with sprockets at the lower end and a guide pulley at the top. Another guide pulley at the adjacent upper end of the secondary arm, so as to provide a short horizontal section therebetween, and a return drum with sprockets at the lower end of the secondary arm, and tractive effort compensating means incorporated in said secondary arm for cancelling the effort due to the upward movement of the chain along the secondary arm while maintaining a proper chain tension.

3,675,757

ELECTROMAGNETIC EDDY CURRENT INDUCTION TYPE CONVEYING METHOD

Yukio Yabuta, Odawara-shi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 24, 1969, Ser. No. 887,836
Claims priority, application Japan, Dec. 28, 1968, 44/981
Int. Cl. B65g *47/00*
U.S. Cl. 198—41 **2 Claims**



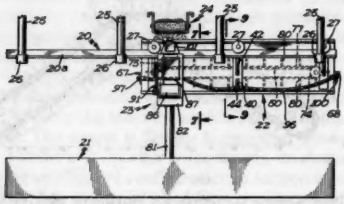
An electromagnetic induction conveying apparatus having a plurality of spaced apart stationary coils for providing a shifting magnetic field and a controller to vary the input to the coils, thereby controls both the direction of travel and the position of an electrically conductive object conveyed by the stationary coils due to eddy currents set up within the object by the shifting magnetic field.

3,675,758

LIVESTOCK FEEDING APPARATUS

Floyd E. Buschbom, Long Lake; Glen D. Hansen, Maple Plain, and Roger L. Johnson, Wayzata, all of Minn., assignors to Van Dale Corporation, Long Lake, Minn.

Filed Feb. 3, 1970, Ser. No. 8,199
Int. Cl. A01k 5/02; B65g 21/12
U.S. Cl. 198—110 23 Claims



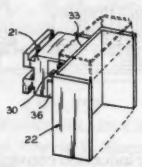
Livestock feeding apparatus including a carriage movable back and forth along a fixed track, a movable conveyor mounted on the carriage, fixed means for driving the carriage on said track, and a connection between the conveyor and the track whereby movement of the carriage on the track causes movement of the conveyor with respect to the carriage. The carriage is made up of a plurality of parts which can be easily and quickly assembled into sections, any number of which can be connected together to provide a carriage of the desired length. A tray or bottom surface in the carriage is constructed so that it can be snapped into place to facilitate easy assembly. Adjacent sections of the carriage are connected together by connector plates at least some of which have mounted thereon an arm which serves as an axle for the rollers by which the carriage is mounted on the track and also have a support member for a drive chain which extends from one end of the carriage to the other and is engaged by a movable drive sprocket. Also disclosed is a unique hanger bracket for connecting the track to supporting posts, either suspended from above or supported from below the tracks, the hanger bracket being such that the track can very quickly and securely be attached to the supporting posts and so that it can readily be adjusted if need be. Also disclosed is an alternative embodiment where the carriage is utilized as a fixed conveyor for feed or the like and wherein the conveyor on the carriage is driven directly by a motor but substantially the same components are used to assemble this embodiment as are used in the traveling carriage arrangement described above.

3,675,759

INTERCHANGEABLE CARTON HOLDER FOR CHAIN CONVEYOR

Robert G. Koppe, Buffalo Grove, Ill., assignor to Exact Weight Scale Corporation

Filed March 5, 1971, Ser. No. 121,494
Int. Cl. B65g 15/00
U.S. Cl. 198—131 4 Claims



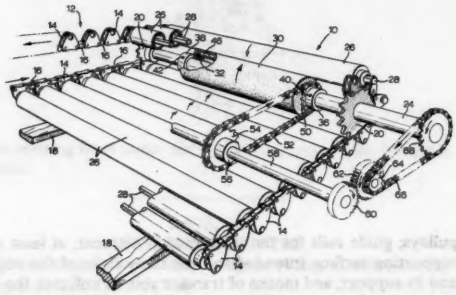
Carton filling mechanism in which a chain carries cartons past a filling station. Carton blank holders of different sizes for different sizes of cartons are snap-fitted over support blocks on the chain, enabling rapid changeover from one carton size to another.

3,675,760

ROLLER SLAT CONVEYOR

Benjamin S. Burrage, Scarborough, Ontario, and George S. Blair, Willowdale, Ontario, both of Canada, assignors to Gerrard Company Ltd., Hamilton, Ontario, Canada

Filed Nov. 25, 1969, Ser. No. 879,812
Int. Cl. B65g 17/12
U.S. Cl. 198—183 2 Claims



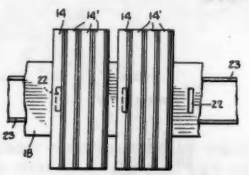
The speed of articles carried on a conveyor formed of free-turning rollers may be modified by applying to the rollers a driven brake.

3,675,761

AUTOMATIC CIGARETTE FEED MACHINE HAVING A VACUUM BELT CONVEYOR

Floyd V. Hall, Durham, N.C., assignor to Liggett & Myers Incorporated, New York, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,347
Int. Cl. B65g 15/00
U.S. Cl. 198—184 13 Claims



The first conveyor which moves the single file of cigarettes upwardly uses an endless belt made of a flexible material with apertures spaced along the path thereof and an evacuation chamber over which the belt slides. The belt serves to cover over the evacuation chamber while the suction force created within the chamber draws air through the apertures in the belt to hold a cigarette thereon. Each cigarette which is positively held on the belt under suction serves to hold a number of cigarettes in front on the conveyor belt.

3,675,762

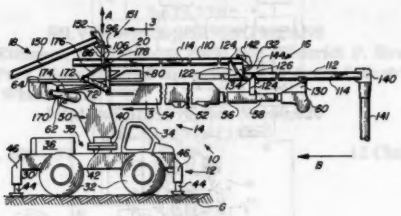
APPARATUS FOR PLACING CONCRETE MIX OR THE LIKE

Charles J. Arndt, Marion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

Continuation of Ser. No. 858,298, Sept. 16, 1969, abandoned.
This application Jan. 11, 1971, Ser. No. 105,735
Int. Cl. B65g 37/00, 41/00
U.S. Cl. 198—233 2 Claims

An improved system for placing concrete mix or the like features a supporting structure mounted on a mobile base and

adapted for pivotable movement about horizontal and vertical axes. At least one distributing conveyor is mounted on the supporting structure, and the discharge end of a feeder conveyor is arranged to empty into the topmost one of the dis-



tributing conveyors. By means of a plurality of interconnected movable links, the discharge end of the feeding conveyor is maintained in substantial vertical alignment with the vertical axis of movement of the supporting structure as the supporting structure pivots about its horizontal axis.

3,675,763

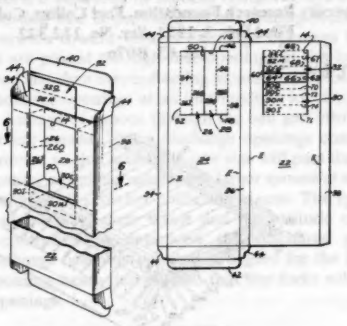
BOX FOR HOLDING TAPE CARTRIDGES

Herbert N. Sandel, 200 N. Bristol Avenue, Los Angeles, Calif.

Filed Sept. 22, 1969, Ser. No. 859,787

Int. Cl. B65d *5/50*

U.S. Cl. 206—45.14 **6 Claims**



Cartons for holding and displaying large and small tape cartridges in a manner that permits unrestricted browsing while resisting theft. The cartons being too wide for insertion into a man's vest pocket and too long for concealment under a man's arm. Bottom retainers being positioned within the cartons, supporting the cartridges at the upper ends of the cartons in alignment with display apertures. Side retainers being formed within the cartons allowing a carton to be used which is wider than the smaller cartridges. The side retainers allowing cartons of the same width to be used both for the larger cartridges and the smaller cartridges, so that they fit well into the same size display stand.

3,675,764

COVERED TRAY PACKAGE

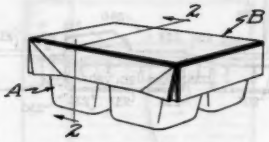
Daniel P. Dutcher, North Saint Paul, Minn., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Jan. 13, 1971, Ser. No. 106,119

Int. Cl. B65d *25/00, 5/26*

U.S. Cl. 206—45.34 **2 Claims**

A tray of plastic or other relatively rigid material having a peripheral generally rectangular outwardly projecting flange is provided with an inverted tray shaped cover. The cover includes a top panel and depending side and end walls. Triangular corner areas of the side walls are adhered to corner flaps on the end walls. The walls are infolded so that there is a tendency for the portions of the side walls between the end walls



to swing inwardly between the diagonal fold lines defining the triangular corner areas. This causes the upper edges of the corner flaps to engage between the rigid tray flange. The cover may be removed by pulling the side walls outwardly to swing the corner flaps out of flange engaging position.

3,675,765

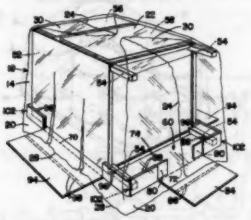
PALLETIZED LOAD

Norbert J. Melsek, Chicago, Ill., assignor to Signode Corporation, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,613

Int. Cl. B65d *85/00*

U.S. Cl. 206—46 FN **2 Claims**



A composite package consisting of an articulated fiberboard pallet or platform, a semi-fragile article positioned thereon, an inner heat-shrinkable plastic film shrunk tightly about and partially enclosing the article and platform and holding the latter partially folded about the article, an articulated outer box-like fiberboard cover telescopically received over the platform, article and film and interlocked with the platform, and a loop of strapping material encircling the fiberboard cover and maintaining the pallet and cover in their interlocking relationship. A method of assembling such a package.

3,675,766

MULTIPLE PUNCTURE INJECTOR DEVICE

Sol Roy Rosenthal, 230 East Delaware Place, Chicago, Ill.

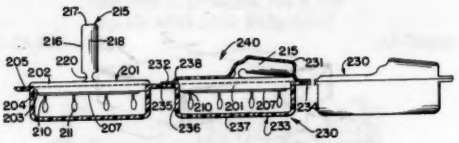
Filed Feb. 4, 1970, Ser. No. 8,625

Int. Cl. A61b *19/02;* **B65d** *81/20*

U.S. Cl. 206—63.4 **20 Claims**

A multiple puncture injector device for use in transcutaneous injection, the injector having a handle hingedly connected to the top surface of a base plate and movable between a use position in which the handle extends outwardly of the base plate and a storage position in which the handle is substantially parallel to the base plate to facilitate storage thereof; the base plates may be straight or arcuate; the handles may be locked in the use and storage positions. The injectors can be

packaged in vacuum-packed hermetically sealed containers, which containers are connected one to another in end-to-end



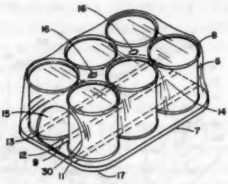
relationship to facilitate the detachment of a selected one of the packages.

3,675,767

SLEEVE WRAPPED PACKAGE WITH A BASE

Monroe F. Taylor, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed May 15, 1970, Ser. No. 37,596
Int. Cl. B65d *65/16, 85/62*
U.S. Cl. 206—65 S **11 Claims**



The shifting of articles contained in sleeve wrapped packages is prevented by adhesively securing the articles to a base member wherein the base member is substantially rigid, planar material with discrete deposits of adhesive for securing the containers thereto; and wherein the sleeve wrap is a tightly engaged tube enclosing the containers and the base member. In one embodiment the packaged articles are cylindrical containers disposed in parallel side by side rows with abutting chime portions. Additional embodiments disclosed the forming of finger opening carrying means in the sleeve wrap and in the base member, and further show a hole hanger means in the base member.

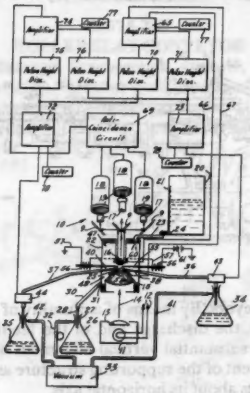
3,675,768

METHOD AND APPARATUS FOR CLASSIFYING AND SEGREGATING PARTICLES WITH ELECTRICAL AND OPTICAL MEANS

Gildardo Legorreta-Sanchez, 2159 Mexico Avenue, Guadalajara, Tal., Mexico

Continuation of Ser. No. 435,377, Feb. 25, 1965, abandoned. This application March 17, 1969, Ser. No. 809,476
Int. Cl. B03b *1/00*
U.S. Cl. 209—4 **50 Claims**

Apparatus for classifying, counting and segregating microscopic particles such as cells. The particles may be contained in a gas or liquid and may be classified by measuring two characteristics thereof such as the size of the nucleus and the size or volume of the cell. This permits to count and separate red blood corpuscules from leucocytes in the same solution. Normal and atypical cells may be physically separated. The size of the nucleus may be measured by transmitted light and



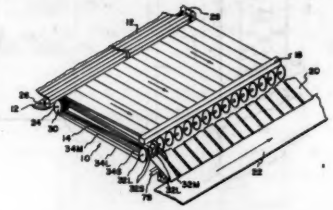
the size of the cell by variations of an electromagnetic field or by scattered light.

3,675,769

METHOD AND APPARATUS FOR SEPARATING POTATOES FROM STONES AND SOIL CLODS

Albert G. Story, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed Feb. 3, 1971, Ser. No. 112,322
Int. Cl. B07c
U.S. Cl. 209—73 **10 Claims**



This invention relates to a novel method for separating potatoes from stones and soil clods which comprises channeling a mixture thereof beneath a source of both visible and invisible light as well as infrared radiation covering that portion of the spectrum between approximately 0.2μ and 3.0μ, measuring the reflectance of each element of the mixture within the narrower band of approximately 0.6μ to 1.3μ as well as the band below the latter from about 1.4 to 2.0μ, formulating a ratio based thereon, comparing the ratios thus adduced for each element of the mixture and sorting the elements of the mixture into two groups having similar reflectance ratios. The invention also encompasses the novel apparatus for carrying out the aforesaid separation which comprises a first conveyor locatable at the discharge end of a conventional potato harvester adapted to receive a mixture of potatoes, stones and soil clods therefrom and channel same into a series of side-by-side parallel lines of individual elements; an emitter of both visible light and infrared radiation located above each line of elements in position to shine thereon one-at-a-time; differential detection means responsive to the light reflected from each element adapted to classify the latter into two categories based upon the ratio of their reflectivities within the selected radiant energy bands; and, sorting means connected to the de-

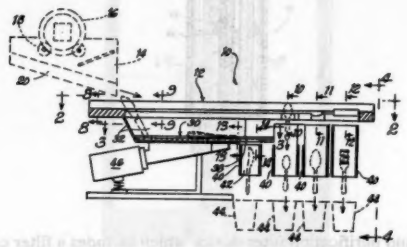
tection means operative to separate each element of the mixture into one of two categories in accordance with the previously determined classification thereof.

3,675,770

SILVERWARE SORTING MEANS

Ralph Ettlinger, Jr., Highland Park, and Frederick P. Strobl, Jr., Park Ridge, both of Ill., assignors to Avent Industries, Inc., Wheeling, Ill.

Filed July 31, 1970, Ser. No. 60,020
Int. Cl. B07b *13/04*
U.S. Cl. 209—97 12 Claims



A silverware sorting means for separating knives, forks and spoons which are delivered in random fashion to the sorting means. A sorting bed is provided with vibrating means for moving silverware toward various discharge openings in the bed. Knives are passed through first openings at the leading end of the bed and then into collecting means located beneath the bed. Discharge openings at an intermediate location provide for the passage of spoons through the bed and into additional collecting means. These discharge openings comprise slots dimensioned so that spoons of one size will pass through first into separate collecting means and larger spoons at a later time for discharge into further collecting means. The spoons are held suspended by their bowls and the attitude of the spoons is controlled to determine the discharge point. Separate discharge openings are then provided for the forks, the prior openings being designed so that the forks will ride over these openings.

ERRATUM

For Class 209—166 see:
Patent No. 3,675,773

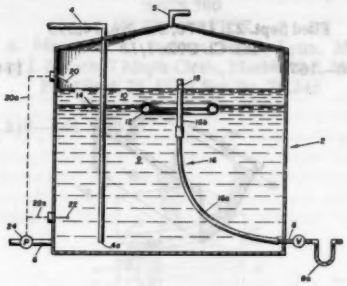
3,675,771

PROCESS AND SYSTEM FOR CONTROL OF FLUIDS IN WATER DISPOSAL SURGE TANKS

Horace L. McKee, Corpus Christi, Tex., assignor to Mobil Oil Corporation

Filed May 23, 1969, Ser. No. 827,224
Int. Cl. B01d *21/00*
U.S. Cl. 210—83 3 Claims

This specification discloses a water-disposal process and system which includes a surge tank in which oil is automatically withdrawn from an oil phase on top of the water at a rate to maintain a constant oil blanket on the water. The oil is withdrawn through a conduit which is secured to a buoy which floats at the oil-water interface. The buoy thus supports the oil inlet of the conduit a fixed distance above the oil-water interface to maintain the thickness of the oil phase constant as the water level varies within the tank. The tank further comprises means for alternately filling and emptying the tank of water between predetermined upper and lower levels. The sides of



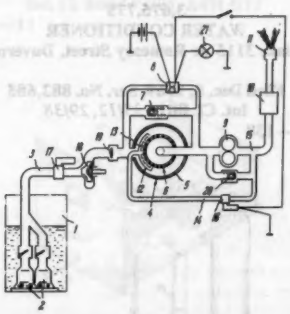
the tank between these levels are thus contacted with the oil phase to provide corrosion protection.

3,675,772

FUEL-FEED SYSTEM FOR AN AIRCRAFT ENGINE

Alexandr Ivanovich Zhukovsky, ulitsa Stepana Supruna, 12 kv. 11; Anatoly Lukich Dobroskokov, Starve shasse, 12a, kv. 28, and Vasily Ivanovich Orlovsky, ploschad vostania, 1, kv. 364, all of Moscow, U.S.S.R.

Continuation of Ser. No. 782,333, Dec. 9, 1968, abandoned.
This application Dec. 2, 1970, Ser. No. 94,620
Int. Cl. B01d *29/38*
U.S. Cl. 210—90 4 Claims



A fuel-feed system for an aircraft engine is provided with a filter, and inlet and outlet piping coupled with the filter. A differential pressure transmitter is coupled with the filter for sensing a pressure build-up when ice deposits on the filter in flight. Return piping is provided for passing fluid into a nozzle spaced proximate the filter. A shut-off valve is coupled with the transmitter and is connected in the return piping to pass fluid to the nozzle when signaled by the transmitter.

3,675,773

FLOTATION SEPARATION OF GLASERITE FROM SODIUM CHLORIDE AND OTHER SALTS

Elie M. Chemtob, Claremont; William R. White, Alta Loma, and Rolando V. Marcote, La Verne, all of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed Aug. 6, 1969, Ser. No. 848,092
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 4 Claims

Glaserite is selectively separated from glaserite-sodium chloride-potassium chloride salt complexes by froth flotation using as the reagent fatty acids or their salts, hydrocarbon sulfates or hydrocarbon sulfonates.

3,675,774

MARINE RECIRCULATING AND HOLDING TANK

George C. Roberts, and Donald A. Dotson, both of Los Angeles, Calif., assignors to Monogram Industries, Inc., Los Angeles, Calif.

Filed Sept. 22, 1970, Ser. No. 74,393
Int. Cl. C02c 1/18
U.S. Cl. 210—167 11 Claims

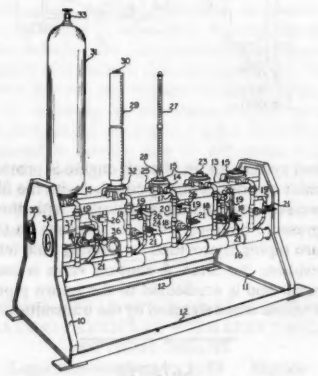
A holding tank is provided to convert a conventional marine toilet into a recirculating toilet system. The tank is provided with a horizontal partition dividing the tank into a lower, clear liquid portion and an upper waste material holding portion. One longitudinal wall of the tank is angled, and a perforated screen is aligned parallel and adjacent this angled wall, connecting to the horizontal partition. A conventional, pump operated marine toilet is then connected to the tank so that flushing liquid is drawn from the bottom of the tank and toilet discharge is applied to the upper portion of the tank. The tank is cleaned by pumping fresh liquid into the lower portion of the tank and pumping the contents of the tank from an intake position immediately above the horizontal partition. When the tank is evacuated by the clean-out pump, a premeasured charge of clear liquid remains in the lower portion.

3,675,775

WATER CONDITIONER

Louis Obidniak, 3115 de Ramesay Street, Duvernay, Quebec, Canada

Filed Dec. 5, 1969, Ser. No. 882,685
Int. Cl. B01d 35/12, 29/38
U.S. Cl. 210—138 5 Claims



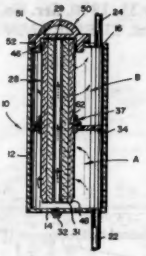
The filtration plant consists of a series of filter units, each comprising a filter bowl containing a tubular filter element. The filter bowl is connected to a water inlet header while the interior of the filter element is connected to a clean water outlet header by way of valve connections. The filter bowl is also valve connected to a drain to permit backwashing. A perforated tube mounted in the center of the filter element which serves to collect clean water during filtering and to provide an even distribution of backwash water on the filter element during backwashing.

3,675,776

FILTER DEVICE

Philip Campo, 202-14 33rd Avenue, Queens County, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,815
Int. Cl. B01d 27/00
U.S. Cl. 210—232 10 Claims



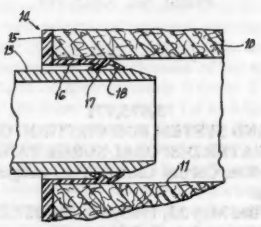
A fluid purification filter device which includes a filter casing for accommodating a disposable filter element. The filter casing is provided with a fluid impervious barrier which divides the interior thereof into at least two compartments. The filter element is symmetrically shaped, and is insertable from either end, into the filter casing and interlockingly engaged with the barrier, such that distinct portions of the filter element extend into each of the compartments and the resultant channelized flow is caused to pass through the several distinct portions of the filter element. A modified embodiment has an independent replacement filter cartridge insertable into the filter element.

3,675,777

FLUID TREATING CARTRIDGE WITH INTEGRAL SEAL

Don E. Heskett, Villa Park; Frank Kryder Hoover, Evanston, both of Ill., and Robert Burkhalter, Jr., Fort Atkinson, Wis., assignors to Morten-Norwich Products, Inc., Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,259
Int. Cl. B01d 27/00
U.S. Cl. 210—232 8 Claims



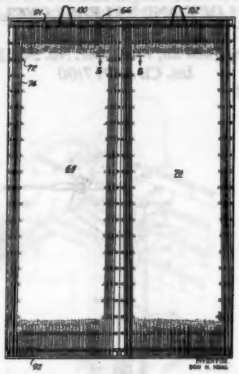
This disclosure relates to a fluid treating cartridge adapted to be employed with fluid treating apparatus, in which a fluid-tight seal is required between the fluid treating element and a tube which projects coaxially into a central bore within the element. The seal is molded integrally with an end cap of the cartridge and tightly encircles the tube with a force which is proportional to the pressure differential across the seal.

3,675,778

SLUDGE TANK WITH SELF-CLEANING SCREEN AND SCREEN FOR USE THEREIN

Don H. Hoag, Erieville, N.Y., assignor to Clarkson Industries, Inc., New York, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,746
Int. Cl. B01d *39/20*
U.S. Cl. 210—237 5 Claims



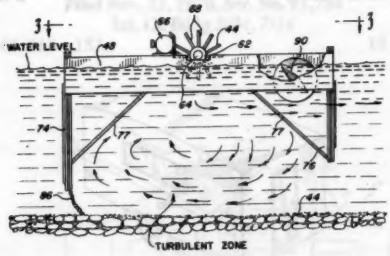
A conveyorized sludge tank is provided with a screen mounted at the bottom of the tank for swinging motion toward and away from the flights of the conveyor and adapted to lean against a course of the conveyor to cause the conveyor flights to continuously wipe the filtering surface of the screen. The screen is preferably formed in sections, each of which has spaced filtering strips and the filtering strips of adjacent sections diverge to form a herringbone pattern that minimizes and equalizes wear on the conveyor flights.

3,675,779

APPARATUS USED IN PURIFYING WASTE WATER

James F. Grutsch, Hammond, and Russell C. Mallatt, Crown Point, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 824,858, May 15, 1969, Pat. No. 3,589,997. This application Jan. 27, 1971, Ser. No. 110,007
Int. Cl. C02c *1/10*
U.S. Cl. 210—242 8 Claims



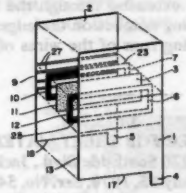
In this system, waste-water, particularly refinery waste-water, is treated in a series of lagoons in which thrive microorganisms that feed on contaminants in the waste-water. The system is characterized by mobile aerator apparatus moving across the lagoons' surfaces. These apparatus introduce air into the lagoons and churn surface water, and they have means which direct at least some of the churning surface water towards the lagoons' bottoms. The underwater turbulence scours the lagoons' bottoms and provides a way of controlling sludge deposits.

3,675,780

FILTER DEVICE

Robert A. Marshall, 15 Jackson Street, Lynn, Mass., and Howard J. Barach, 7 Maple Circle, Marblehead, Mass.

Filed Sept. 25, 1970, Ser. No. 75,345
Int. Cl. B01d *31/00, 29/04*
U.S. Cl. 210—446 3 Claims



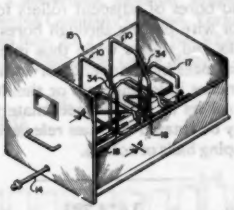
A compact device for filtering microorganisms such as bacteria from water or other liquid containing the same has a generally flat, envelope-type structure wherein the envelope is divided into a liquid-receiving upper chamber and a lower filtrate-receiving chamber by a flexible microporous membrane.

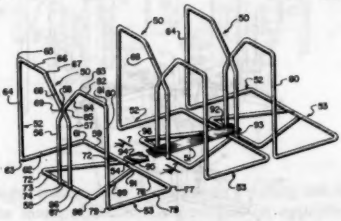
3,675,781

FILE DRAWER DIVIDER

Coleman R. Chamberlin, P.O. Box 84, New Windsor, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,600
Int. Cl. B65d *83/08*; A47f *5/11*
U.S. Cl. 211—11 2 Claims

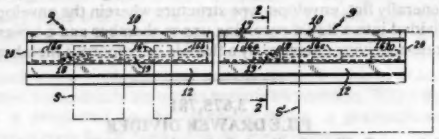




A file drawer divider or sectionalizer made of bent wire that is bent to provide a horizontally extending support portion and a vertically extending frame portion extending upwardly from one side of the horizontally extending support portion. The

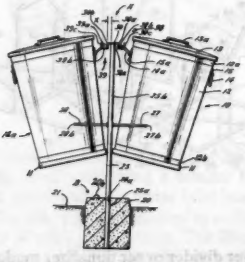
wire is bent and made of one piece by continuous bending starting from one edge of the horizontal portion and running horizontally with bent and vertically upwardly downwardly and over to the opposite end of the horizontal portion to provide an intermediate backing or support portion with the runs of wire crossing one another to provide the intermediate portion. In order to support the depending intermediate portion against horizontal displacement and fixed to the forward run thereof is a triangular shaped wire that extends horizontally and is connected between the intermediate portion and the forward run of the horizontal portion. The wire runs are joined by welding. The wire frame dividers can be assembled one in front of the other and joined by an elongated rigid plate or strip adapted to be extended through the intermediate portions to align opposing notches on the edges of the strip with the parallel depending runs of the wires of the intermediate portion.

3,675,782
HANGER FOR SHEET MATERIAL
James M. Dudley, 2220 Southside Blvd., Jacksonville, Fla.
Filed July 15, 1970, Ser. No. 54,992
Int. Cl. A47f 7/00
U.S. Cl. 211—50 **26 Claims**



A series of longitudinally aligned rollers or balls lie in an elongated hanger housing between a pair of caging walls and overlie a bottom opening in the housing formed by the spacing of such walls. The rollers or balls are interconnected by portions of a connecting means such as a plurality of pins passing respectively into bores of adjacent rollers for example, or a flexible string or wire passing through bores in such balls or rollers. The balls and rollers while thus interconnected may move limited distances independently of one another. A selective magnetic means independently or simultaneously moves such balls and rollers to release sheet material held thereby. The hanger may be rotated to cause release of sheet material held by the gripping balls or rollers.

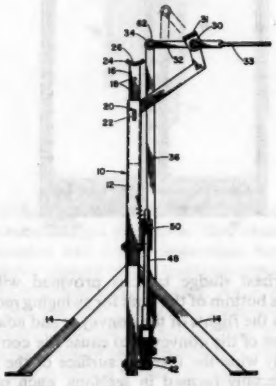
3,675,783
HOLDER FOR REFUSE CANS
Murray C. Reese, 7423 Stanwick, Harris County, Tex.
Filed May 28, 1970, Ser. No. 41,241
Int. Cl. A47g 29/00; A45f 3/44
U.S. Cl. 211—71 **6 Claims**



A new and improved refuse can holding apparatus permits easy removal and mounting of associated refuse cans, maintaining the cans in a stable relation with respect thereto while such cans are mounted.

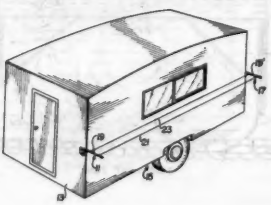
A new and improved apparatus for securing the device with respect to its associated mounting base is provided. The base may be supported by either a foundation, which is embedded in the ground, or a base which is mounted with respect to the floor or ground.

3,675,784
ONE STEP LOCK AND RELEASE CYCLE STAND
Ansel N. John, 2770 Joel Court, Dayton, Ohio
Filed June 26, 1970, Ser. No. 50,130
Int. Cl. A47f 7/00
U.S. Cl. 211—22 **5 Claims**



A simplified one step lock and release cycle support stand which includes an adjustable support, an extending support and a moveably operated pressure arm. The bottom bracket and the down tube of a cycle are placed on the adjustable and extending support respectively. The cycle is locked in place by operating the pressure arm to apply pressure in the cycle frame thus retaining the cycle on the stand.

3,675,785
POSITIONABLE CLOTHESLINE SUPPORT
Calvin C. Martin, P.O. Box 3516, Visalia, Calif.
Filed Jan. 30, 1970, Ser. No. 7,037
Int. Cl. A47f 5/08; D06f 53/00
U.S. Cl. 211—119.1 **3 Claims**



The present invention relates to a portable clothesline arrangement for use with a camper or the like. It has spaced apart extensions, secured to spaced apart surfaces of the camper, to comprise horizontal reaches between which the clothesline is connected. Each of the extensions may be moved, against biasing retaining force, to its non-protruding

or storage position, which is preferably 180° from its useful or operative position. Locking or locating means cooperate with the biasing means to maintain the support extensions in either the selected storage or operative position.

3,675,786

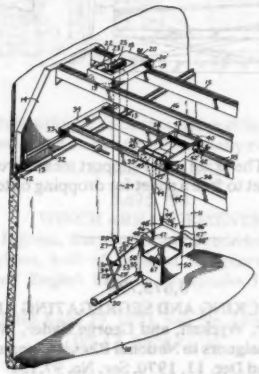
OVERHEAD CAB CRANE CONTROL STRUCTURE

Ray Wilson, Route 01, Box 102, West Alexandria, Ohio

Division of Ser. No. 813,562, April 4, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,021

Int. Cl. B66c 19/00

U.S. Cl. 212—127 5 Claims



First and second carriages movable along respective rails have block and tackle supporting cables connected to drum mechanism and suspended therefrom to carry load and maintain operator cab level position. A platform is inside the operator cab and a bevel ring gear driven to be rotatable up to 180° in each of opposite directions carries the platform upon which operator control means are mounted. Fluid actuators and cab mounted fluid valves operatively associated therewith are effective for load holding and release with respect to cab control for operator safety. The cab itself is not allowed to turn because of the cable suspension and power lines to and from the cab.

3,675,787

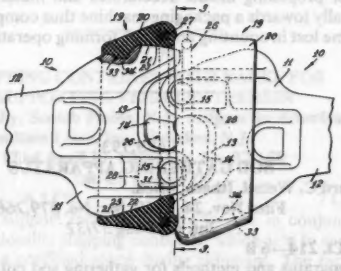
ELASTOMERIC INTERLOCK TO PREVENT VERTICAL DISENGAGEMENT OF RAILWAY CAR COUPLES

William B. Krauskopf, 723 East Willow Avenue, Wheaton, Ill.

Filed Nov. 23, 1970, Ser. No. 91,704

Int. Cl. B61g 3/04, 7/14

U.S. Cl. 213—153 10 Claims



To prevent vertical disengagement of the knuckles of railway car couplers, for example Type "E" couplers, a generally ring shaped elastomeric body is provided for encircling the head of a car coupler and the knuckle of a mating car coupler. Embedded in the body is a reinforcing safety sling in the form of an endless wire cable in a position to overlie this knuckle. Mounting clips also embedded in the body, protrude therefrom and are adapted to be secured to the pivot pin of the coupler.

3,675,788

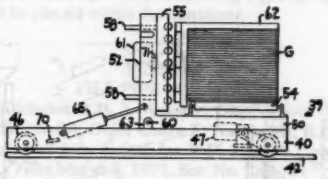
GLASS TURNOVER AND PACKING DEVICE

William P. Cathers, Allison Park, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

Filed Sept. 28, 1970, Ser. No. 76,085

Int. Cl. B65g 7/00

U.S. Cl. 214—1 Q 16 Claims



An L-shaped member is used for placing horizontal stacks of glass in a substantially vertical position in an L-shaped frame such as a pallet or an L-skid. The glass is transferred from a packing machine by a roller conveyor to the L-shaped member. The L-shaped frame is placed upside down around the glass and the member is rotated between about 91° and 100° so that the glass is in a substantially vertical position resting on edge in the L-shaped frame.

3,675,789

INGOT MANIPULATOR FOR A ROLLING MILL

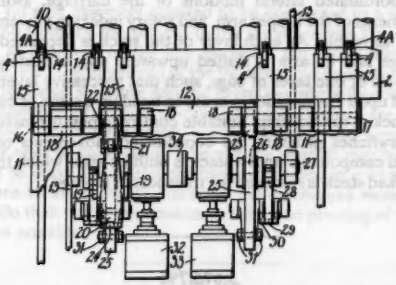
Clifford Sturdy, Chesterfield, England, assignor to Davy and United Engineering Company Limited, Yorkshire, England

Filed Nov. 23, 1970, Ser. No. 92,015

Claims priority, application Great Britain, Nov. 21, 1969, 56,998/69

Int. Cl. B65g 7/00

U.S. Cl. 214—1 QG 6 Claims



An ingot manipulator for use with a rolling mill has a pair of elongate manipulator heads arranged on opposite sides of a roller table on the entry side of the mill, the heads being displaceable transverse to their length towards and away from each other and one of the heads has on the side thereof facing the other head a plurality of tilting fingers, the fingers are arranged in at least two groups positioned side-by-side on the head and drive means are provided for operating fingers to tilt ingots arranged in tandem on the roller table. Means are also provided by which the fingers of one group are operable inde-

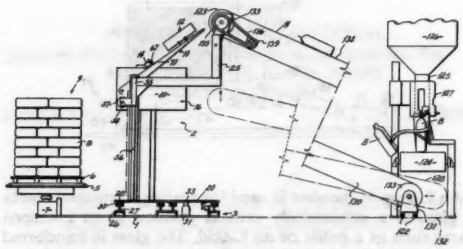
pendently of the fingers of the other group or groups so that if all the fingers are initially operated together to tilt two or more ingots and one ingot fails to tilt then the group of fingers associated with that ingot can be operated independently of the other fingers to bring about tilting of that ingot.

3,675,790

BAG STACKING MACHINE

Arthur C. Avril, Cincinnati, Ohio, assignor to A & T Development Corporation, Cincinnati, Ohio

Filed Nov. 25, 1970, Ser. No. 92,616
Int. Cl. B65g 57/28
U.S. Cl. 214—6 P **18 Claims**



A stacking machine which deposits upon a pallet individual bags of premixed dry concrete, cement, mortar mixtures and other products as the filled bags issue from a processing machine. The stacking machine, in general, comprises a stationary base, a lift and carriage assembly shiftable vertically and also laterally along the base, with a flipper arm including gripping jaws swinging relative to the carriage. The bags are fed at random to a bag conveyor having a lower receiving end tracked upon the floor and an upper discharge end swiveled to the carriage and disposed above the flipper arm so that the bags may issue from the conveyor to be discharged by the flipper arm.

A turntable, carrying a suitable pallet, receives the filled bags from the flipper arm so that a layer of bags having a predetermined pattern may be deposited upon the pallet by the coordinated lateral motions of the carriage, swinging movements of the flipper arm, and rotary indexing movements of the turntable. As each layer of the stack is deposited, the carriage and its arm is shifted upwardly approximately the thickness of one layer of bags, such that successive layers are placed upon one another in order to build up a stack of bags in interlocked relationship. Suitable control apparatus including limit switches program the coordinated movements of the several components until a stack is built up after which the interlocked stack is removed for transport or storage.

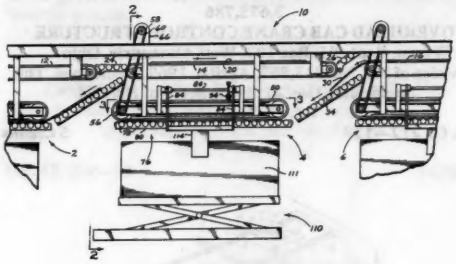
3,675,791

SHEET STACKING APPARATUS

Phillips G. Russell, Alsea; Leon E. Guggenbickler, Albany, and John H. Crawford, Corvallis, all of Oreg., assignors to Brand S Corporation, Corvallis, Oreg.

Filed Nov. 16, 1970, Ser. No. 89,745
Int. Cl. B65g 57/00
U.S. Cl. 214—6 DK **6 Claims**

Apparatus for stacking sheets with end edges of the sheets substantially aligned and in a vertical plane. The apparatus includes a pair of elongated, laterally spaced, powerdriven conveyor belts engaging the top faces of the sheets, and skate roller support means supporting the bottom faces of the sheets. The conveyor belts are independently driven, and each may be stopped independently of the other in producing alignment of a sheet. The skate roller support means are moved out from under a sheet to free a sheet for dropping onto a stack.

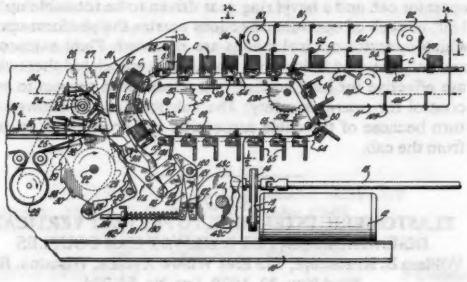


3,675,792

CRACKER STACKING AND SEGREGATING APPARATUS

Arthur J. Griner, Wyckoff, and George Ryder, West Orange, both of N.J., assignors to National Biscuit Company

Filed Dec. 11, 1970, Ser. No. 97,151
Int. Cl. B65g 57/30
U.S. Cl. 214—6 BA **13 Claims**



An apparatus to which plural rows of crackers are delivered for counting and stacking operations. The crackers are fed on carriers interposed to form a single line of stacks. A combination of propelling means accelerates and meters the stacks gradually towards a packaging machine thus compensating for the time lost in counting and stack forming operations.

3,675,793

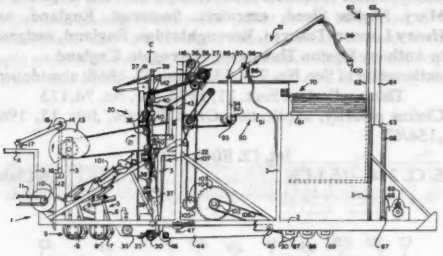
SOD GATHERING APPARATUS

Clifford C. Wetzel, Ithaca, Mich.

Filed Nov. 24, 1969, Ser. No. 879,266
Int. Cl. B65g 57/32
U.S. Cl. 214—6 B **9 Claims**

Apparatus and methods for gathering sod cut in strips and lying in a field wherein each strip successively is lifted from one end, transported vertically to a substantially horizontal

transfer station, delivered to a platform, and deposited one atop another in a stack. The platform is lowered in timed relation to the depositing of each successive strip so as to maintain the upper end of the stack at a substantially constant level.

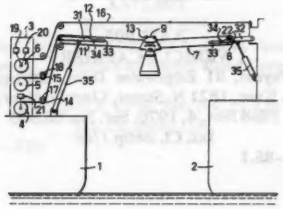


3,675,794

WINCH ARRANGEMENTS

David John Ingram, Barnhurst, and Frederick James Maillardet, Meopham, both of England, assignors to The General Electric and English Electric Companies Limited, London, England

Filed April 29, 1971, Ser. No. 138,767
Int. Cl. B65g 67/58
U.S. Cl. 214—13 12 Claims



A transfer arrangement for transferring articles between two relatively movable stations, such as ships at sea, in which a support cable carried by a winch on one of the stations and extending to a connecting member on the other station provides a support for the articles being transferred, wherein vertical oscillations of the load, resulting from relative movement of the stations, are damped by controlling the operation of the winch in response to control signals derived from variations in the distances between the stations and modified by further signals derived from variations in the tension in the support cable.

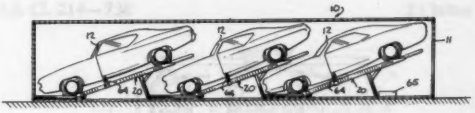
3,675,795

SHIPPING CONTAINER WITH RACKS FOR SUPPORTING VEHICLES THEREIN

Herbert Dluhy, Scotch Plains, N.J., assignor to American Export Isbrandtsen Lines, Inc., Hoboken, N.J.

Filed April 27, 1970, Ser. No. 32,158
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 CC 7 Claims

A vehicle support rack, preferably for use in conjunction with a fully closable shipping container, which acts to support a vehicle in a confined space during shipment. The rack includes a pair of connected tracks, each of which has a support leg on one end thereof to enable the rack and vehicle to be maintained in an inclined position. Each leg is locked in position by a resiliently biased catch in engagement therewith, the catch being operable by a release cord disposed at one end of the rack. Once the vehicle is positioned on the rack, the rearward portion thereof is raised and locked into place by the support legs. Rollers are provided, both on the bottom and sides of the rack, to facilitate placement of the rack within the container, with such placement allowing a greater number of vehicles to be placed within the container.

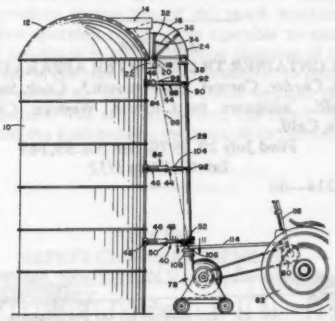


3,675,796

FILL PIPE FOR SILO

James D. Atkinson, R.D. 3, Wooster, Ohio; James W. Lepley, R.D. 1, Smithville, Ohio; Claire E. Nussbaum, R.D. 1, Orrville, Ohio, and John E. Stolzfus, R.D. 1, Apple Creek, Ohio

Filed March 8, 1971, Ser. No. 122,044
Int. Cl. B65g 65/32
U.S. Cl. 214—17 C 10 Claims



A fill pipe assembly adapted to be connected to a silo and extend from the top thereof to the lower portion for connection to a blower or the like by which the silo is filled with silage, etc. The upper end of the fill pipe has a laterally extending discharge structure and the invention primarily comprises the provision of suitable pivots and brackets which are axially aligned and intermediately spaced between the upper and lower ends of the conduit, whereby the conduit may be oscillated to move the lateral discharge extension in a to and fro pattern to move evenly distribute the discharged material in the silo than under circumstances where no pivoting of the fill pipe is possible.

3,675,797

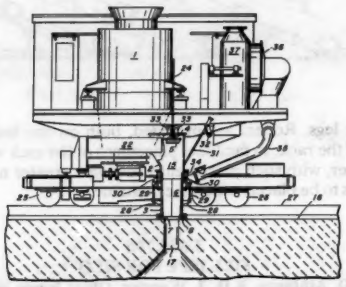
CHARGING CAR FOR COKE OVENS

Erich E. W. Pries, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed Aug. 5, 1970, Ser. No. 61,166
Claims priority, application Germany, Feb. 26, 1970, P 20 09 017.9
Int. Cl. F23k 3/00
U.S. Cl. 214—35 R 7 Claims

A charging car for coke ovens of the type in which coke is conveyed through feed pipes into holes extending through the tops of the ovens, characterized in that covers can be removed from the holes, coal charged into the ovens and the covers

replaced without permitting the escape of dust and smoke into the atmosphere. This is accomplished in accordance with the invention by means of gripping devices which can be lowered within the feed pipes themselves to grip the charge hole covers and elevate them within the feed pipes to a point where they



will not interfere with the discharge of coal from the car into the ovens. After the coal is charged into the oven, the feed-hole cover, still gripped by the gripping device, is lowered within the feed pipe to the point where it again seals the charge hole but before the feed pipe is removed.

3,675,798

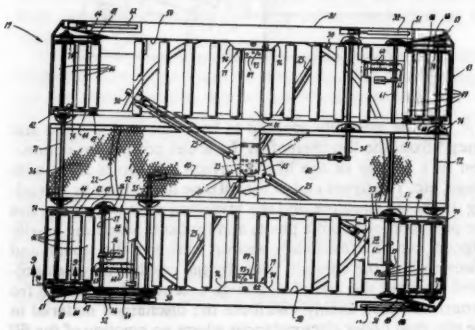
CONTAINER TRANSPORTER APPARATUS

Victor H. Carder, Carmel, and Kenneth L. Cook, Salinas, both of Calif., assignors to Cochran Western Corporation, Salinas, Calif.

Filed July 29, 1970, Ser. No. 59,143

Int. Cl. B60p *1/52*

U.S. Cl. 214—84 **14 Claims**



Apparatus for loading, transporting and unloading containers of the pre-loaded pod type. A transporter trailer is provided including a mobile main frame, conveyor means to move a container to and from a transport position, container hold-down means engaging grooves on the container sides and adapted to accomodate container misalignment during loading, container stops spaced apart along the length of the conveyor, and transfer ramps at the conveyor ends. For loading from a selected end a container is pushed onto a normally lowered transfer ramp and moved over the associated container stop which is depressed until the container is locked in transport position. Operating means are provided to lower a selected container stop and raise its associated transfer ramp to an upwardly inclined position for unloading the container.

3,675,799

PARKING APPARATUS WITH POWERED PALLETS IN EACH PARKING STALL

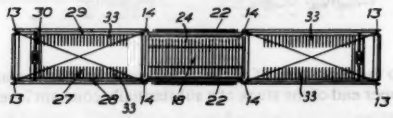
Frank Streeton Steed, Deceased, late of Bath, England; by Robert Mark Rutherford, executor, Somerset, England; by Mary Phyllis Steed, executrix, Somerset, England, and Henry Lawson-Tancred, Boroughbridge, England, assignors to Anthony Sigston Thompson, Harrogate, England

Continuation of Ser. No. 738,735, June 17, 1968, abandoned. This application Sept. 21, 1970, Ser. No. 74,173

Claims priority, application Great Britain, July 12, 1967, 32,154/67

Int. Cl. E04h *6/06*

U.S. Cl. 214—16.1 CB **6 Claims**



A multi-story mechanical storage system for vehicles (or other means) providing receiving spaces at each level in register with a vertical lift shaft, a lifting structure in said shaft for carrying a vehicle to a selected level, movable pallets for supporting vehicles in storage, said lifting structure and pallets being of skeleton formation including laterally extending tines which enable the said structure to pass down past a pallet moved into the shaft so that a vehicle on the structure will remain behind on the pallet, the loaded pallet then being moved back into its receiving space.

3,675,800

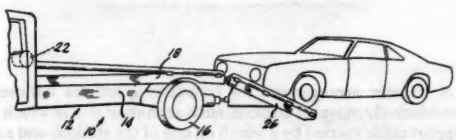
VEHICLE CARRIER

Romer G. Weyant, 81 Edgewater Drive, Elkhart, Ind., and Kenneth B. Kaar, 1821 N. Street, Lincoln, Nebr.

Filed Nov. 4, 1970, Ser. No. 86,805

Int. Cl. B60p *1/44*

U.S. Cl. 214—85.1 **1 Claim**



A truck for hauling a disabled motor vehicle or the like. The truck has a flat bed and a ramp on which the vehicle can be supported, and the ramp may be lowered for loading and unloading purposes. Hydraulic cylinders are provided for raising and lowering the ramp, and a winch is mounted on the truck for pulling the disabled vehicle up the ramp to a loaded position.

3,675,801

APPARATUS FOR CONVEYING, HANDLING, LOADING, AND UNLOADING OF PALLETIZED MATERIALS

Carl B. Larson, 430 South Russell, Monterey Park, Calif., and William T. Gimbel, 740 Chaucer Road, San Marino, Calif.

Filed April 22, 1970, Ser. No. 30,628

Int. Cl. B65g *39/00*

U.S. Cl. 214—310 **11 Claims**

A flexible method and apparatus facilitating the stacking, storing, loading, unloading, selection, and separation of elongated bar and other similar materials, in which an elongated roller conveyor is sectionalized to provide a main material

loading and unloading section in association with a supply feeder section at one end and an exit discharge section at its other end, a pallet pan being provided for the elongated material which can either be conveyed to the main section by means of a crane, fork-life truck or other means, or delivered directly from the feed section of the conveyor. The apparatus also permits an empty unloaded pallet pan to be placed at the main section, and the material independently moved from a supply point into the pan by hoist means or from the conveyor feed station. Powered rollers are operable to selectively shift

the loaded pallet pan in opposite directions at the main section, and controllable means provided for vertically adjusting the level of the loaded pallet pan to a normal position in which it may be bodily shifted endwise together with the material therein, or to a lowered position in which the pan will be retained against movement and driving rollers projecting through the pan bottom operated for moving the material endwise independently of the pan. Electrical controls are provided for obtaining the variously required operations and coordinating the loading and unloading movements of the pallet pan and material. Adjustable selectable stop means are provided for terminating the movement of material entering the pallet pan from the feed section of the conveyor.

3,675,802

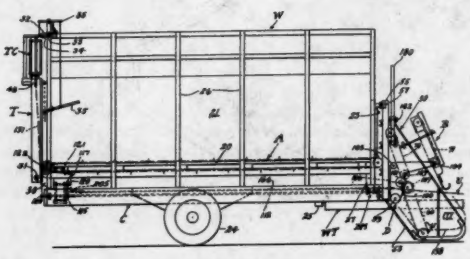
BALE WAGON

Albert M. Best, New Holland, and Keith B. Anderson, Terre Hill, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed April 2, 1970, Ser. No. 25,226

Int. Cl. B60p *1/36*

U.S. Cl. 214—520 **15 Claims**



A bale wagon having bale pick up and bale thrower mechanism for picking up bales from the ground and for throwing them into the wagon mounted for up and down movement under influence of the wagon tongue and having a tail gate at its rear end for discharging loaded bales from the wagon for subsequent conveying into a barn or other point of storage.

3,675,803

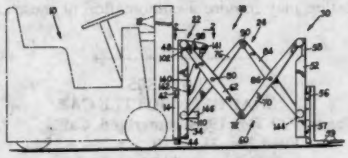
LOAD-HANDLING APPARATUS WITH REACH MECHANISM

Gaylord G. Baughman, Troutdale, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed April 6, 1970, Ser. No. 25,802

Int. Cl. B66f *9/14*

U.S. Cl. 214—730 **2 Claims**



A lift truck with an elevatable carriage mounting, through extensible reach mechanism, load-holding structure, such as lifting forks. The reach mechanism includes a horizontal torque shaft which extends across the support frame, and a pair of laterally spaced extensible folding arm assemblies which join to opposite ends of the torque shaft and extend forwardly to the load-holding structure. The load-holding structure is moved between extended and retracted positions with respect to the carriage by operation of a double-acting ram operatively connected to the reach mechanism. A line which supplies pressure fluid to the ram to actuate it in a contraction stroke to produce contraction of the reach mechanism includes a pilot-operated check valve operable to maintain a pressurized condition in such line upon stopping of the contraction stroke in the ram. Near completion of the contraction stroke, stop means on the support frame engages the load-holding structure. The stop means and the check valve act firmly to hold the load-holding structure in its retracted position.

3,675,804

SAFETY CLOSURE ASSEMBLY

Lewis A. Micallef, New York, N.Y., assignor to Leeds and Micallef, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,300

Int. Cl. A61j *1/00*; B65d *55/02*

U.S. Cl. 215—9 **14 Claims**

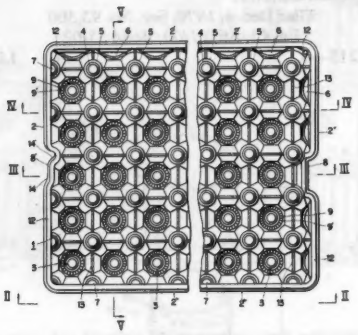
A safety closure assembly of a container includes a cap having internal interrupted threads and a container neck having external specially arranged guide surfaces. These surfaces define essentially three zones on the neck. At the neck top is a mating thread zone for receiving the interrupted threads. A second thread zone is spaced from the top and cooperates in

assuring a liquid-tight seal across the neck opening by the cap. Intermediate these threaded zones is a zone which is only traversed by the cap-thread elements upon the application of deliberate and informed movement or manipulation of the cap other than the ordinary unscrewing action. This manipulation may assume the form of either an application of increased force to urge one of the thread elements passed a zone of interference or the axial shifting of the cap through an access zone for the thread elements after a stop is encountered forbidding further turning of the cap relative to the neck; or the manipulation may require a combination of these cap movements.

3,675,805
SNAP OPEN BOTTLE CAP
Victor Shane, P.O. Box 19, Summerland, Calif.
Filed Jan. 21, 1970, Ser. No. 4,591
Int. Cl. B65d *41/20*
U.S. Cl. 215—42 **2 Claims**

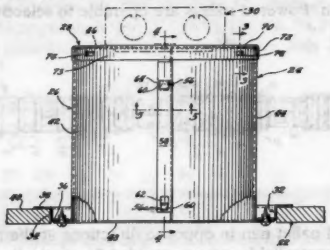
A bottle cap having fault lines seals a bottle provided with wedge shaped ramps which cause the fault lines to yield when pressure is applied to the top of the cap.

3,675,806
PLASTIC TRAY FOR EGGS
Hikoji Noguchi, No. 1251-10, Oaza-Narahashi, Yamato-Machi, Kitatama-gun, Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 70,043
Int. Cl. B65d *81/00*
U.S. Cl. 217—26.5 **4 Claims**



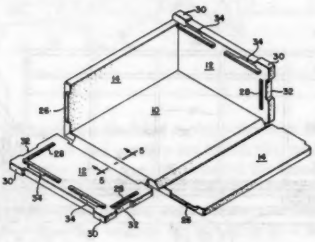
Plastic tray for eggs which can readily and stably be stacked or packed in layers within a carton by means of novel convex and concave projections provided thereto which cooperate with the corresponding convex and concave projections provided to another plastic tray of the same kind when a number of trays of the same kind are disposed one over the other by turning them alternately at an angle of 180°, and which can rightly be disposed in the manner mentioned above by means of handling portions provided to opposite two flanges of the tray and having configurations different from each other.

3,675,807
RECESSED LIGHTING FIXTURE HOUSING
Alvin R. Lund, Carpentersville, and Jack Kaufman, Chicago, both of Ill., assignors to Markstone Manufacturing Company
Filed May 11, 1970, Ser. No. 36,061
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.94 **6 Claims**



A housing construction for a recessed lighting fixture having a sidewall to completely surround a lamp chamber. The sidewall has top and bottom edges defining the height of the lamp chamber, and has first and second side edges connecting the top and bottom edges. A plurality of openings are spaced along the first side edge and a plurality of corresponding lock tabs are spaced along the second side edge, with the tabs and openings aligned to interengage for rigidly interlocking the adjacent side edges of the sidewall together. A top plate closes the upper end of the chamber and has a depending flange embracing the upper marginal portion of the interengaged sidewall. Inwardly struck shear formed bosses on the flange project into holes in the upper marginal portion of the sidewall to interlock the flange and top plate to the sidewall forming the lamp chamber. The structure may be assembled without tools.

3,675,808
KNOCKDOWN FOAMED PLASTIC SHIPPING CONTAINER
Delbert L. Brink, 7417 Fourth Avenue, S., Seattle, Wash.
Filed June 26, 1970, Ser. No. 50,230
Int. Cl. B65d *7/30*
U.S. Cl. 220—7 **7 Claims**



A unitary knockdown foamed polystyrene shipping container blank molded in a single operation for fruits, comestibles and other articles has a flat rectangular bottom wall with the four sidewalls hinged thereto by integral thin flexible hinge portions. Two of the sidewalls have slots therein adjacent their side edges and two of the other sidewalls have ears projecting from their respective side edges for insertion into the slots to lock the adjoining sidewalls together. Two of the side walls have lugs on each of their upper corners which project beyond the plane of the side walls and the top edges of the sidewalls. The lugs are adapted to interlock with recesses formed in the bottom corners of the side walls having the lugs thereon of an

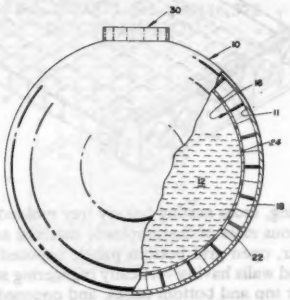
adjacent shipping container. A recess in two of the side walls allows air to circulate freely around the containers when stacked in side-by-side relation.

3,675,809

CAPILLARY INSULATION

Jay L. McGrew, and John P. Gille, both of Littleton, Colo., assignors to Martin Marietta Corporation, New York, N.Y.

Filed June 9, 1970, Ser. No. 44,678
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG **22 Claims**



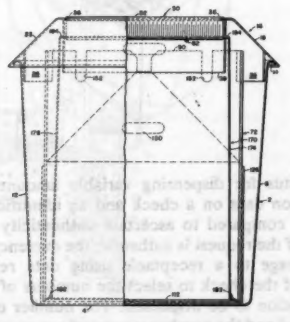
The internal capillary insulation comprises cellular material secured to the internal wall of a vessel which is to contain liquid having a boiling temperature lower than the ambient temperature of the vessel. The cellular material disclosed provides a plurality of discrete cells. Each cell provides for establishing a column of gas therein between the tank wall and the liquid body. A capillary cover substantially closes the liquid side of the cells and has at least one capillary opening per cell designed to form a stable capillary gas-liquid interface or membrane at the capillary opening. The gas columns having a stable gas-liquid interface insulate the liquid from the vessel and in addition, support the liquid in the vessel thereby permitting fabrication of the insulation from materials which have low strength and weight and low thermal conductivity.

3,675,810

RECEPTACLE FOR WASTE MATERIAL

Thorvald S. Ross, Jr., Manchester, and Dante V. Consalvo, Everett, both of Mass., assignors to said Thorvald S. Ross, Jr., by said Dante V. Consalvo

Continuation-in-part of Ser. No. 813,477, April 4, 1969, abandoned. This application March 19, 1970, Ser. No. 20,974
Int. Cl. B65d *25/00*
U.S. Cl. 220—17 **7 Claims**



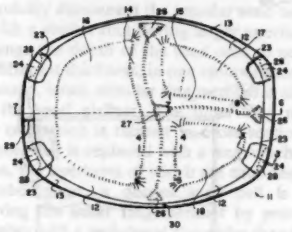
The invention is a combined holder-container system and the container thereof, for the compaction, storage, segregation, and eventual disposal of compacted trash. It comprises an outer holder, an inner removable and disposable container, a removable protective inner shield or liner, and an apertured cover adapted to prevent unwanted egress of glass shards, etc.

3,675,811

VENDING CONTAINER WITH COVER THEREFOR

Kenneth W. Artz, Mohnton, Pa., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Dec. 18, 1969, Ser. No. 886,279
Int. Cl. B65d *1/36, 43/10, 21/02*
U.S. Cl. 220—20 **2 Claims**



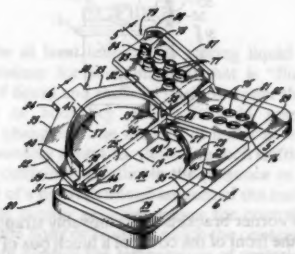
Disclosed is a covered vending container which is divided into compartments by divider wall ridge members. The divider wall ridge members describe generally double-curved paths across the bottom of the container, and rise to a height above the bottom of the container less than the height of the side walls extending peripherally therearound. Container strength is enhanced by the curved paths of the divider walls and by the manner of intersection between the divider walls and the container side walls. The container cover is a clear dome provided with denestable stacking means and corner detent means for engaging the underside of the flange portion of the vending container. In preferred embodiments, the tray portion of the vending container is molded foam sheet and the dome portion of the vending container is clear plastic material.

3,675,812

PLASTIC COVER WITH HINGED CLOSURE AND MOLDING DIES THEREFOR

John A. Foster, Rockford, Ill., assignor to J. L. Clark Manufacturing Co., Rockford, Ill.

Filed May 13, 1970, Ser. No. 36,917
Int. Cl. B65d *43/16, 83/06*
U.S. Cl. 220—31 S **10 Claims**



The disclosed plastic cover is similar to and an improvement on that shown in U.S. Pat. No. 3,095,995 by virtue of the projection of the peripheral edge of the hinged closure flap laterally and outwardly beyond the full length of an arcuate

sealing rib and the opposed wall of the dispensing opening with the outer face of the rib making an acute included angle with the under surface of the flap and the inner rib surface disposed substantially parallel to the path of separation of the die surfaces in which the flap and rib are molded. The molding of such a cover construction is made possible by a unique die assembly which permits the hinged flap and rib to be disposed at a substantial obtuse included angle relative to the dispensing opening during the molding of the cover.

3,675,813
COVER FOR WASTE CONTAINER
Johnson T. Morgan, 3635 Blue Lake Drive, Birmingham, Ala.
Filed July 16, 1970, Ser. No. 55,389
Int. Cl. A65d *51/04*; B65d *25/28*
U.S. Cl. 220—36 **6 Claims**

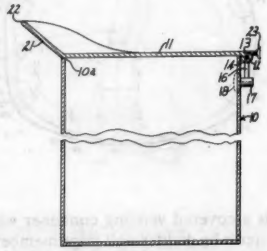
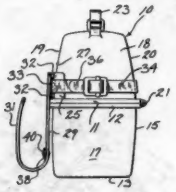


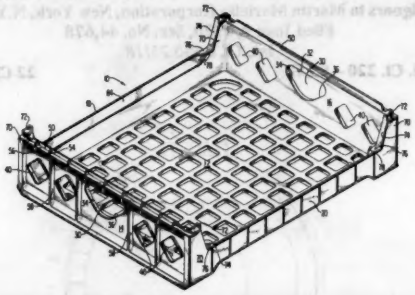
Plate-like cover hingedly connected at one side to waste container with other side of cover carrying outwardly and upwardly projecting arcuate member positioned for lateral force applied thereto to exert lifting force to said opposite side of cover. To reduce required lifting force, counterweight carried by said one side of cover.

3,675,814
AUXILIARY CARRIER FOR PORTABLE BOXES
Edwin H. Graf, W 187, S6876 Jewel Crest Drive, Muskego, Wis.
Filed Oct. 22, 1970, Ser. No. 83,138
Int. Cl. A45r *13/40*; B65d *25/00*
U.S. Cl. 220—85 R **5 Claims**



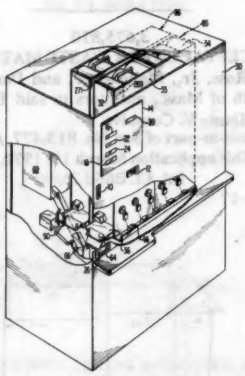
A pair of corner brackets are removably strapped to spaced corners at the front of the cover of a lunch box of the type having an outwardly projecting surrounding rib where the cover and main body meet, each bracket having the upper end of a U-shaped clip attached thereto whereby an elongated item may be releasably held by the clips in a position close to the body of the lunch box and extending longitudinally thereof below the cover.

3,675,815
BAKERY TRAY
Houston Rehrig, 100 Los Altos Drive, Pasadena, Calif.
Filed Dec. 16, 1970, Ser. No. 98,285
Int. Cl. B65d *21/04*
U.S. Cl. 220—97 D **8 Claims**



A stacking, cross nesting bakery tray molded from a single homogeneous mass of thermoplastic material and including a rectangular, open grid bottom panel, opposed upwardly extending end walls having vertically registering stacking means along their top and bottom edges, and opposed upwardly extending side walls having a vertical height no greater than half the height of the end walls to permit cross nesting of two vertical stacks of the trays. The end walls and side walls each include means facilitating filling of the tray with packages of bakery products.

3,675,816
CURRENCY DISPENSING APPARATUS
Edgar R. Bourke, II, Wayland, and Robert C. Snow, Concord, both of Mass., assignors to Digital Security Systems, Inc., Natick, Mass.
Filed June 18, 1970, Ser. No. 47,585
Int. Cl. G07f *11/00*
U.S. Cl. 221—13 **25 Claims**



Apparatus for dispensing variable amounts of currency. Verification data on a check and an identification card are read and compared to ascertain authenticity of a currency request. If the request is authentic, the currency is transferred from storage to a receptacle using data representing the amount of the check to select the numbers of each currency denomination to be dispensed. The number of bills actually transferred and the number requested are compared while the currency is temporarily stored in the receptacle located be-

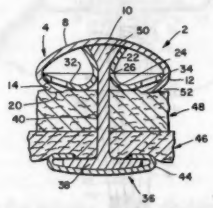
hind a locked door. If the two numbers coincide, the door is unlocked for access by the recipient and the check is transferred to another internal storage location as the operator retrieves his identification card. Otherwise, the door remains locked; the currency is transferred to still another storage location; and both the check and card are returned to the operator.

3,675,817

FASTENING DEVICE

Donald Lake, Watertown; Badger Perrin, Roxbury, and Frederick J. Nolan, Waterbury, all of Conn., assignors to TRW Inc., Cleveland, Ohio

Filed Feb. 18, 1971, Ser. No. 116,372
Int. Cl. A44b 1/42
U.S. Cl. 24—95 **5 Claims**



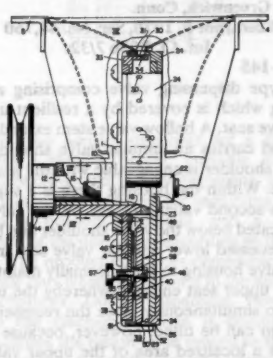
A fastening device known as a tack attached burr. A low profile shell has a tack receiving and retaining vise seated therein. The vise includes a hollow shank having an upper end bearing against the undersurface of the crest of the shell and an opposite outwardly flared end which merges into a peripheral flange. The flange is turned back toward the upper end of the shank and the crest of the shell. The shell is crimped over the vise and has an inwardly turned rim at its end opposite the crest. The rim underlies a substantial area of the flange on the vise and extends downwardly away from the shell crest and terminates in a free circular edge defining a tack receiving opening in axial communication with the shank of the vise.

3,675,818

SEED PLANTER WITH REPLACEABLE ROTARY TRAP CHAMBER

Era E. Urban, Rural Routh No. 1, Bluffton, Ohio

Filed Sept. 14, 1970, Ser. No. 71,690
Int. Cl. B65h 3/28
U.S. Cl. 221—224 **9 Claims**



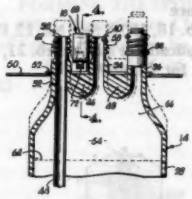
The present invention relates to a seed planter for planting a row of seeds. The device includes a rotating annular ring member provided with a plurality of seed receiving apertures in the periphery thereof. A second annular ring member is located concentrically within the first-mentioned annular ring member and forms a floor for each seed cell for retaining seeds therein. The rotating ring member moves relative to a seed hopper wherein seeds are introduced into the seed cells. Continued rotation of the seed cell member brings the seeds into adjacency with the ground at which point they are ejected from the seed cells. The rotating speed of the seed cell member is adjustable relative to the linear speed of the seed planter thus providing an infinitely variable seed spacing in the ground. The seed cell size is determined by the size of the seed receiving aperture of the annular rotating ring member. This member is readily disconnectable from the seed planter to vary the aperture size. Thus, if it is desired to utilize the seed planter for larger seeds having the same thickness, it is merely necessary to quickly disconnect the annular seed cell ring and replace this with a similar ring having larger apertures. If it is desired to change the depth of the seed cells to accomodate seeds having different thickness, in one embodiment of the invention the second, inner, annular ring member is also disconnected from the seed planter. The inner ring member is replaced with one which is thinner in cross section and the seed cell ring member is replaced with a ring which is thicker in cross section, the apertures of which are thus deeper. In an alternative embodiment, a deeper seed cell is provided without removing the inner ring member by providing the outer ring member with a peripheral slot wider than the widest seed cell desired. A semicircular member is positionable into the peripheral slot and thus the thickness of the seed cell is determined by the depth of the slot. In this embodiment, it is only necessary to replace the outer ring member to vary the seed cell aperture width or depth or both.

3,675,819

FLOATING INGREDIENT TANK SOLD-OUT SYSTEM FOR BEVERAGE DISPENSING MACHINES

Theodore L. Hanson, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed Aug. 18, 1970, Ser. No. 64,693
Int. Cl. B67d 5/22
U.S. Cl. 222—51 **13 Claims**



Apparatus for at least temporarily storing liquid material employs a container for such material that is "floated" in another body of liquid and shifts its position under the opposing influences of buoyancy and gravity in response to predetermined changes in the amount of material within the container, and sensing means for detecting such shifting of the position of the container to indicate the presence or absence in the container of a predetermined amount of the material.

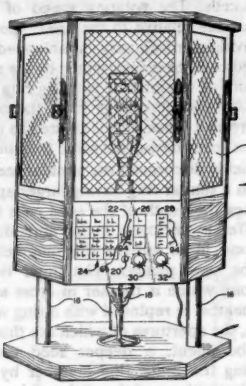
The apparatus further provides means for controlling the temperature of the body of liquid in which the container is immersed to in turn control the temperature of material within the container through heat exchange. Although the apparatus is adapted for a variety of applications, a preferred embodiment disclosed for illustrative purposes is especially suited for use in beverage vending or dispensing machines to handle beverage syrups or other liquid beverage forming ingredients and to indicate a "sold-out" condition thereof.

3,675,820

LIQUID DISPENSING APPARATUS

George M. Newberry, R.D. 1, and Nicholas F. Wowk, Carriage House East, both of Kirkwood, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,254
Int. Cl. B67d 5/10
U.S. Cl. 222—76 15 Claims



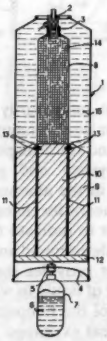
Apparatus for dispensing any of a plurality of liquids either singly or in predetermined combinations either "automatically" according to standard recipes or "manually" by selectively varying the quantities of each liquid dispensed. The disclosed embodiment is particularly directed to an alcoholic beverage dispenser and mixer which is simple and economical in construction, using sturdy and reliable electro-mechanical components, yet versatile in operation by providing two relays between each solenoid valve controlling flow of the respective liquids and a cam operated microswitch controlling the time for which a voltage is provided to the solenoid.

3,675,821

APPARATUS FOR DISPENSING TWO FLUIDS SIMULTANEOUSLY

Bruno Morane, Paris; Charles Paoletti, Aulnay Sous Bois, and Gilles Terrasse, Deuil La Barre, all of France, assignors to L'Oreal, Paris, France

Filed Feb. 18, 1970, Ser. No. 12,174
Claims priority, application France, Feb. 21, 1969, 6904480
Int. Cl. B67d 5/52
U.S. Cl. 222—80 21 Claims



Container for storing separately two fluids which are to be dispensed simultaneously, which comprises an outer jacket carrying a dispensing valve having two inlets, an inner tube connected to one of said inlets, piston means for simultaneously reducing the volume of both the tube, and the annular space between the tube and jacket, and means for introducing pressure fluid to actuate the piston. The inner tube may be longitudinally collapsible, the piston may be adapted to slit the tube longitudinally as it advances, or the piston may be divided into parts which slide axially upward both inside the tube and outside it.

3,675,822

TUBE SQUEEZER

Gino Casali, and Joseph P. Casali, both of 807 Thomas Street, Chicago Heights, Ill.

Filed Sept. 3, 1970, Ser. No. 69,315
Int. Cl. B65d 35/28
U.S. Cl. 222—103 8 Claims

A device for squeezing collapsible tubes such as toothpaste tubes characterized by three members interconnected together along one end thereof to form a V-shaped compartment diverging from the one end for receiving a toothpaste tube. The outer two members are substantially planar and the inner member is longitudinally curved and arranged with the convex curve surface adapted to engage the tube so that the application of pressure to the tube is moved progressively from the one end towards the head of the tube. In the preferred embodiment, the means for holding the three members together includes foot means for enabling the storage of the tube and the dispenser in the upright position, and the pressure member acting on the curved member has a movable block for transferring the squeezing force to the curved member so that the point of transfer can be shifted to increase or decrease the leverage applied to the flexible member.

3,675,823

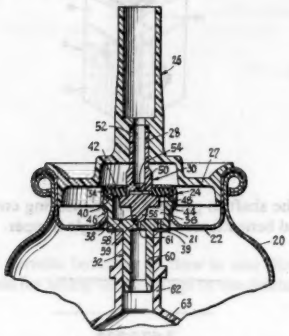
TILT ACTION MIXING DISPENSER VALVE

Wolf Steiman, Fairfield, Conn., assignor to Valve Corporation of America, Greenwich, Conn.

Filed June 9, 1970, Ser. No. 44,760
Int. Cl. B05b 7/32
U.S. Cl. 222—145 5 Claims

A tilting type dispensing valve comprising a cup-shaped valve housing which is covered by a resilient upper annular discharge-valve seat. A hollow valve stem extends through the valve seat and carries an annular valve shoulder inside the housing. The shoulder is engageable with the seat to close off the discharge. Within the housing there is a supporting boss constituting a second valving means on the valve stem, said boss being located below the valve shoulder and being engageable with a recessed lower annular valve seat in an opposite wall of the valve housing to both normally maintain the valve shoulder and upper seat engaged whereby the upper valve is closed, and to simultaneously close the recessed lower valve seat. The stem can be tilted, however, because the shoulder can compress a localized area of the upper valve seat. This separates another portion of the shoulder from the seat whereby liquid can flow from the housing, out through the

hollow valve stem. The tilting of the stem also uncovers the lower valve seat. A container connected to the lower valve seat can empty into the valve housing, as well as a large container enclosing the housing, which discharges into the housing through a hole provided in a wall of the housing. Mixing of the liquids occurs in the valve housing.

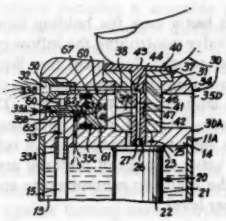


3,675,824

AEROSOL CAN WITH PROPELLANT ACTUATED SLIDE PISTON

Matthew Edward Hein, Elgin, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Aug. 7, 1970, Ser. No. 62,099
Int. Cl. B67d 5/54
U.S. Cl. 222—145 **17 Claims**



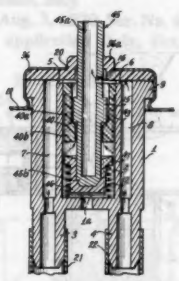
An isolation-type aerosol dispenser for a fluid product, which includes a slidable piston, movable in a chamber between a dispensing and a non-dispensing position. The piston and chamber are adapted for regulating communication between a product container and a venturi-type, discharge nozzle of the dispenser, according to the movement of the piston. The product container communicates with the discharge nozzle only when the piston is in the dispensing position in the chamber. During dispensing, flow of aerosol propellant to the discharge nozzle is conducted to the chamber and causes the piston to be moved to the dispensing position. The piston and chamber are also adapted to vent the product container only when the piston is in the dispensing position.

3,675,825

SELF CLEANING VALVE

Bruno P. Morane, Paris, France, assignor to L'Oreal, Paris, France

Filed July 20, 1970, Ser. No. 56,377
Claims priority, application France, Aug. 12, 1969, 6927754
Int. Cl. B65d 83/14
U.S. Cl. 222—148 **7 Claims**



A self-cleaning valve for dispensing fluids sold under pressure comprises a sliding member positioned to open and close passages between the interiors of containers for fluid to be dispensed and the central channel in a dispensing spout. The sliding member is spring biassed toward the closed position and driven to its open position by depression of the spout. As the spout is being depressed, but before it strikes the sliding member to open the passageways to the fluid containers, it reaches an intermediate position in which it opens a passage between pressurizing fluid and the central channel, so that only pressurizing fluid is exhausted, thereby cleaning the channel.

3,675,826

PITCHER WITH A FLEXIBLE INNER CONTAINER FORMING THE SPOUT

Robert E. Lorren, 489 S. Perue Street, Cicero, Ind.

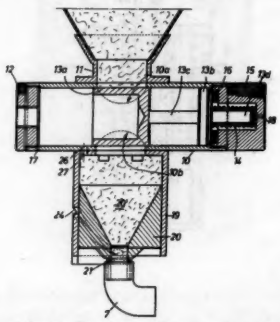
Filed Feb. 26, 1970, Ser. No. 14,271
Int. Cl. B67d 5/06
U.S. Cl. 222—183 **7 Claims**

A "spoutless" pitcher, that is, a pitcher having no projecting spout and yet which provides in effect a projecting pouring spout by the co-operation of a flexible liquid container and a notch formed in a rigid outer shell. A rearward slant of the outer shell, and vertical rib members on its interior, retard ice from moving into the spout zone so formed. These and other features provide a pitcher means particularly desirable for an extremely sanitary drinking supply for individual use, as for hospital patients.

3,675,827
PORTABLE METERING CHARGERS FOR LOW VISCOSITY MATERIALS

Roger Gaston Bailly, Aubenas, France, assignor to Societe Anonyme, Societe Miniere Et Metallurgique De Penarroya, Paris, France

Filed Oct. 30, 1970, Ser. No. 85,608
Claims priority, application France, Nov. 20, 1969, 6940010
Int. Cl. B65d 5/54
U.S. Cl. 222—194 6 Claims



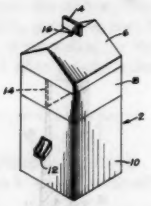
The invention comprises a portable metering apparatus for supply of low viscosity materials in measured quantities and intended mainly for handling charges of explosive material such as ammonium nitrate and fuel oil, said apparatus comprising a hopper for the material to be metered, a horizontal cylinder located beneath the hopper and having a piston member mounted therein, which piston member includes a first and second section spaced axially apart to provide a transfer passage and a metering device into which material flows by gravity from the hopper through the transfer passage into a measuring chamber incorporated in the metering device until the piston is actuated to cut off the flow and permit discharge of a measured amount of material from said chamber. A metering plunger is adjustably mounted within the measuring chamber by which its capacity can be pre-set to measure a give quantity. The cylinder has inlet and outlet orifices for connection respectively to the hopper and the metering chamber. The piston member is urged, e.g. by spring means, to a normal or open position in which the hopper remains in communication with the metering chamber through the transfer passage to permit of transfer of material by gravity from the hopper to said chamber, pneumatically operated means being provided for effecting displacement of the piston member to an operative or release position to cut off the flow of material from the hopper and permit release of the measured quantity in the metering chamber.

3,675,828
DISPENSING MACHINE

Herman Buhles, Jr., 880 N.E. 42nd Street, Fort Lauderdale, Fla.

Filed June 1, 1970, Ser. No. 42,403
Int. Cl. G01f 11/10
U.S. Cl. 222—362 2 Claims

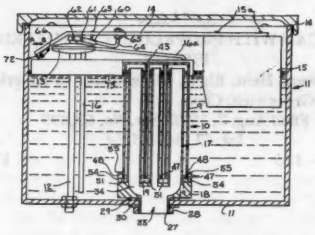
A dispensing machine including a rotatable, manually operated handle, a shaft connected to the handle, a movable upper plate connected to the shaft, topless-bottomless measuring containers connected below and adjacent openings in the upper plate, bins with hoppers above the measuring containers, a fixed bottom plate positioned immediately below the measuring containers, a chute below and adjacent to a cut away portion in the bottom plate, and a stop mechanism connected to the shaft to prevent the measuring containers from being placed beneath more than a single hopper.



3,675,829
APPARATUS FOR EMPTYING AND REFILLING LIQUID IN A RESERVOIR

Albert H. Halff, 3636 Lemmon, Dallas, Tex., and Allen F. Reid, 258 Mill Spring Road, Manhasset, N.Y.

Filed March 19, 1970, Ser. No. 21,095
Int. Cl. B67d 3/00
U.S. Cl. 222—204 11 Claims



The apparatus has a tank for holding liquid and, a siphon discharge and a valve controlling the inflow of liquid by a float lever responsive to the level of the liquid. The siphon discharge has downflow discharge passages capped by a vertical casing with siphon upflow passages. The float lever is forced downwardly into the liquid by actuating the exterior level to start the siphon discharge and on refilling of the tank closes the inlet valve. Blocks of material are mounted at the upper level of the liquid to minimize the surface area of the liquid at the upper level.

3,675,830
BEVERAGE PUMP DISPENSER

Clyde H. Clement, Phoenix, Ariz., assignor to Leland B. Larson, Phoenix, Ariz., a part interest

Filed Aug. 10, 1970, Ser. No. 62,576
Int. Cl. B67d 5/40
U.S. Cl. 222—385 2 Claims

The invention discloses a beverage pump which has a pouring spout which nests within a sanitary sealing lid when the pump is not in use. The pump fits into a standard beverage container of the bottle type and can be attached to other containers. The pump is held in place by a cap which closely fits the lip and a portion of the neck of the container and which

has means for tightening the cap around the neck of the beverage container to provide a tight seal. A deformable

gasket which permits beverage to flow in one direction only provides means for lifting the beverage to the discharge spout.

3,675,831

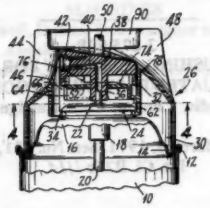
TAMPERPROOF AEROSOL DISPENSER

Steven W. Beres, Bridgeport, Conn., assignor to VCA Corporation, Greenwich, Conn.

Filed Sept. 30, 1970, Ser. No. 76,873

Int. Cl. B65d *83/00*

U.S. Cl. 222—402.11 **8 Claims**



A tamperproof aerosol dispenser comprising a container for liquids, said container having a dispensing device such as a pump or valve which includes a movable part. When the movable part is actuated it effects a discharge of the liquid contents of the container. An actuator cap is mounted on the container in such a manner that it can be freely turned while still being held captive. The cap movably mounts a turnable actuator button, which is positioned in operative relation with respect to the movable part or valve of the container. The actuator button can be moved between discharge and non-discharge positions, and its movement to the discharge position requires the use of both hands of the user, one hand holding the cap body against turning movement on the container. The container and cap body have adjoining surfaces which enable these parts to be simultaneously grasped by the one hand and held against turning while the actuator button is being shifted to its discharging position. By virtue of the cap body normally having free rotation on the container there is minimized the likelihood of a child being able to actuate or operate the dispenser. Usually a child will hold the container with one hand and endeavor to operate the actuator button with the other hand as he has seen an adult do. However, this will only result in failure to cause actuation of the button, since the free turning of the cap body defeats his efforts, so that no discharge occurs. To effect a discharge, it is necessary to actuate the discharge button while the cap body is simultaneously held against turning with respect to the container (and the button). A locking device is provided in the illustrated embodiment, which becomes unlocked when this proper action is taken, after which the button may be shifted or depressed in the necessary manner to effect the discharge. After use, the user employs a reverse operation to return the actuator button to its non-discharging position which, in the illustrated embodiment of the invention, constitutes a locked position wherein depressing movement of the button is prevented.

3,675,832

AEROSOL VALVE

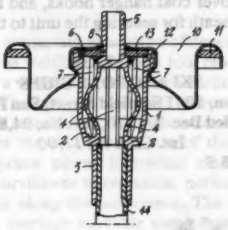
Tomasco Ruscitti, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Milan, Italy

Filed Aug. 3, 1970, Ser. No. 60,312

Claims priority, application Italy, Oct. 21, 1969, 23668 A/69

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.24 **6 Claims**



Aerosol valve comprising a socket-shaped body securable to the top of an aerosol container, a stem and elongated flexible arms fast with and integral to the socket-shaped body and the stem. The bottom of the socket-shaped body has a hole, from the lower portion of which a hollow extension projects, on which a drawing tube can be threaded and inserted into the container.

3,675,833

CARRYING RACK FOR MOTORCYCLE OR SIMILAR VEHICLE

Robert D. Barr, 5945 Cloverly Avenue, Temple City, Calif.

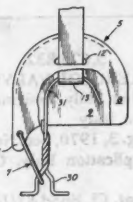
Filed Oct. 7, 1970, Ser. No. 78,970

Int. Cl. B60r *9/10*

U.S. Cl. 224—29 R **1 Claim**

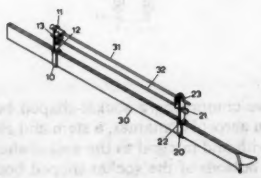
A tie-down for a motorcycle, trailbike, mini-bike or other two wheel motorized bycycle to secure a position which permits the motorcycle or other vehicle to be safely transported and protected from damage during the transporting from one point to another. This tie-down carrying rack may be mounted on the front or rear of any passenger vehicle, truck, camper, trailer, trailer bed, travel trailer, boat trailer or trailer especially constructed for motorcycles or other two wheel vehicular transporting.

3,675,834
CARRYING DEVICE
James G. Peters, 1 Penrose Lane, Colorado Springs, Colo.
Filed Dec. 28, 1970, Ser. No. 101,808
Int. Cl. A45c 13/26
U.S. Cl. 224—45 T 8 Claims



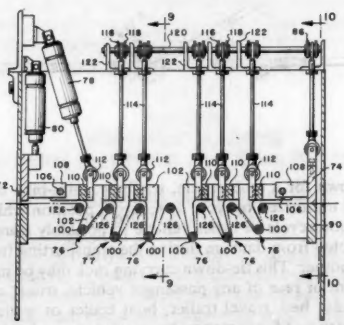
A strap-type carrying device includes a sheath member with a strap extending through the sheath member to form a buckled loop for gripping an object to be carried. The sheath is arranged to cover coat hanger hooks, and a securing ring is secured to the sheath for securing the unit to the coat hangers.

3,675,835
SKI AND POLE GRIPS
Edward S. Wilson, 1001 Sunfield Street, Sun Prairie, Wis.
Filed Dec. 3, 1970, Ser. No. 94,859
Int. Cl. A45c 11/00
U.S. Cl. 224—45 S 4 Claims



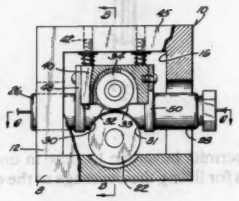
A pair of ski and ski pole carrying grips made of elongate resilient straps. Each strap has two apertures at its upper end, one for receiving the handle of a ski pole and the other for receiving the tip of a second ski pole. Each strap has another aperture in its lower end for receiving the upper end of the strap when the strap is placed around a pair of skis.

3,675,836
PULL TAB MACHINE
William O. Young, Jr., and Walter J. Quattlebaum, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Jan. 7, 1971, Ser. No. 104,726
Int. Cl. B65h 17/42
U.S. Cl. 226—113 4 Claims



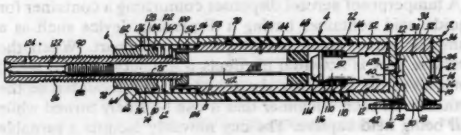
An accumulator for a web treating machine which accumulates paper for the next cycle of the machine while the machine is performing an operation on the paper accumulated in the previous cycle.

3,675,837
WIRE FEEDER
David S. Gerould, Appleton, Wis., assignor to Weld-Motion, Inc., Appleton, Wis.
Filed Sept. 3, 1970, Ser. No. 69,407
Int. Cl. B65h 17/22
U.S. Cl. 226—187 7 Claims



In a wire feed system as used, for example, to feed weld wire, there is a positively driven roll in a fixed location and a complementary pressure roll which, together with the means providing the wire feed track, floats to and from the feed roll rectilinearly on the common diameter of the two rolls to accommodate variations in wire dimension, the pressure roll and wire guides being subject to spring bias pre-set at the proper value for a given wire diameter.

3,675,838
MUZZLE BUSHING ASSEMBLY FOR POWER-ACTUATED FASTENING TOOLS
Andrew G. Bakoledis, Clinton, Conn., assignor to Olin Corporation
Filed March 8, 1971, Ser. No. 121,635
Int. Cl. B25c 1/14
U.S. Cl. 227—8 7 Claims

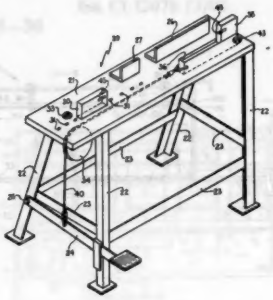


An adjustable muzzle bushing assembly for a powder-actuated tool having means to prevent the muzzle bushing thereof from accidentally moving out of adjustment. The assembly includes a collet with a threaded bore which receives an externally threaded muzzle bushing. A longitudinal portion of the external surface of the muzzle bushing is reduced and the collet has a portion of its external surface reduced to form a flat surface intersecting its bore. A spring has a portion coiled about the collet and a straight portion in engagement with the flat surface and the muzzle bushing to act as a detent when the spring is in engagement with the flat surface of the muzzle bushing.

3,675,839
NAIL INSERTING DEVICE
Merritt H. Thomas, North Rose, N.Y.
Filed March 18, 1971, Ser. No. 125,519
Int. Cl. B27f 7/02
U.S. Cl. 227—140 2 Claims

A machine for inserting a headless nail at either end of an elongated wooden member has a table top on which one or

more upstanding member guides are adjustably secured, the guides having a flat surface, against which the member may be manually secured, extending longitudinally. A first block is adjustably secured on the table top and a second block is slideable in a longitudinally extending slot in the table top in a



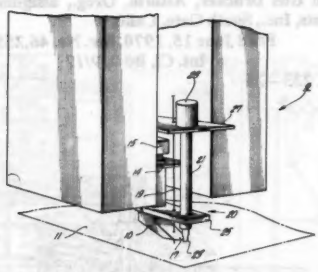
direction toward the first block by means of a foot pedal and spring biased in the other direction. Each block has a horizontally extending hole therein for reception of one end of a nail whereby the nails are forced into the ends of the member when the foot pedal is depressed.

3,675,840

WIRE CUTTING APPARATUS FOR REFLOW WIRING MACHINES

Le Roy Dean Towell, Dallas, Tex., assignor to Computer Industries, Inc., Los Angeles, Calif.

Filed Dec. 15, 1969, Ser. No. 885,077
Int. Cl. B23k *1/00*
U.S. Cl. 228—4 **6 Claims**



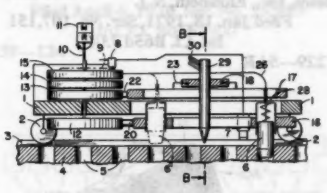
A wire cutting method and apparatus are disclosed for use with a reflow wiring machine for interconnecting selected areas on printed circuit boards. The wire cutting apparatus functions to sever the insulated wire utilized by the reflow wiring machine after a solder joint has been completed. The wire cutting apparatus includes a shaft having a knife edge at its lower extremity positioned adjacent a reflow foot or capillary through which the insulated wire is passed. A knife actuator is connected to the shaft to lower the knife edge into contact with the wire between the solder joint and the reflow foot to sever the wire against the board surface. This results in the formation of a small wire tail located beyond the solder joint and a small wire tail extending below the reflow foot for the initiation of the next solder joint.

3,675,841

APPARATUS FOR AUTOMATIC EXECUTION OF MACHINING OPERATIONS, SUCH AS WELDING

Friedrich Gutlhuber, Huberweid-Strasse 57, 8375 Ruhmannsfelden, and Lothar Kasper, Kircher-Strasse 48, 836 Deggendorf/Danube, both of Germany

Division of Ser. No. 856,883, Sept. 29, 1969. This application Sept. 30, 1969, Ser. No. 862,405
Int. Cl. B23k *1/00*
U.S. Cl. 228—25 **12 Claims**



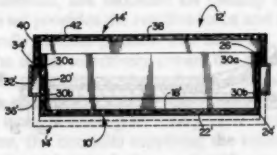
A method for automatic execution of repetitive machining operations, such as welding, utilizes a tool mounted for movement, relative to a workpiece, along two mutually perpendicular coordinates. The individual partial movements of the tool along each of the respective coordinates are coordinated in a manner such that the total movement of the tool along the workpiece comprises plural individual closed path movements, such as curvilinear movements, periodically repeated at different points along the workpiece. The apparatus comprises a wheeled carriage movable along rails which may be mounted on the workpiece, and the carriage has a support base mounting a first table for longitudinal displacement therealong, and a second table is mounted on the first table for displacement transversely thereof. The second tablemounts the tool. A plurality of rotatable cam discs are rotated by a control shaft and cam followers engaging these discs regulate the movements of the first and second tables. Positioning pins, engageable in apertures in the workpiece, are provided, and are also controlled by the cam discs. The positioning pins further may be engaged with a template mounted alongside the workpiece. The tool, in addition to its movement effected by the transversely movable table, may also be mounted in an eccentric so that the tool may execute a small radius circular movement in following the closed path, thereby widening a weld zone, for example.

3,675,842

DECORATIVE COVERING FOR A CONTAINER COMPONENT

George G. Bergh, Plainville, and Robert G. Bergh, North Attleboro, both of Mass., assignors to Bergh Bros. Co., Inc., Attleboro Falls, Mass.

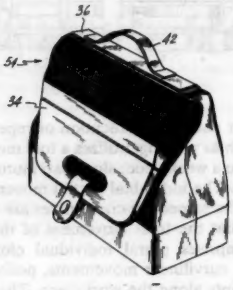
Filed May 4, 1970, Ser. No. 34,247
Int. Cl. B65d *15/22*
U.S. Cl. 229—6 R **1 Claim**



A decorative covering for a container component of the type having a bottom member and a multi-sided wall member. The covering includes a blank of sheet material overlying the exterior surfaces of both the bottom member and the wall member. The sheet material overlying the wall member is pro-

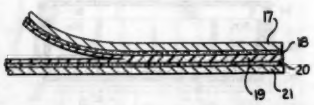
vided with grooves which receive at least one of two inwardly disposed parallel flanges on a trim member surrounding the wall member. The other flange on the trim member may overlap the upper edge of the wall member. Alternatively, the other flange may be seated in a second parallel groove in the sheet material covering the wall member.

3,675,843
COLLAPSIBLE TOTE BAG
Sidney I. Polansky, Great Neck, N.Y., assignor to Packaging Associates, Inc., Elizabeth, N.J.
Filed Jan. 18, 1971, Ser. No. 107,151
Int. Cl. B65d 33/00
U.S. Cl. 229—54 R **14 Claims**



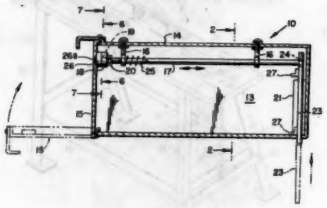
A collapsible tote bag is provided having a generally rectangular base and side walls extending in a generally vertical direction from the base to define an enclosed area. The side walls are formed of a flexible plastic material and a pair of opposed side walls are respectively provided with first and second handle members along the top edges thereof to facilitate carrying the bag in a first configuration wherein the side walls are fully vertically extended. A third handle is mounted on one of these opposed side walls at a position located approximately halfway between the base and the tops of the first and second handles. The side walls are foldable to a second configuration wherein the first and second handles are positioned adjacent the other side wall of said opposed pair near the base, thereby positioning the third handle at the top of the folded configuration. Fastening means is mounted on the other side wall adjacent the base for securing the first and second handles to the side wall to permit carrying of the bag with the third handle in the folded configuration of the bag.

3,675,844
ENVELOPE WITH SEALING MEANS
Stanley Edward Sorrell, Glossop, England, assignor to Sterling Coated Materials Limited, Cheshire, England
Filed March 9, 1970, Ser. No. 17,539
Int. Cl. B65d 27/16, 27/30
U.S. Cl. 229—80 **4 Claims**



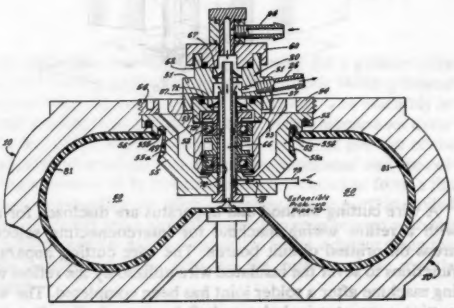
A sealing strip which is particularly useful for securing two layers of paper together, for example sealing the flap of an envelope, which consists of a paper carrier of low internal strength coated on both sides with a pressure-sensitive adhesive. One or both adhesive surfaces may be protected with a removable strip of paper or plastics material.

3,675,845
RURAL MAIL BOXES
Ernest O. Scheerer, 777 Vaugn Avenue, Toms River, N.J.
Filed Nov. 9, 1970, Ser. No. 88,010
Int. Cl. B65d 91/00
U.S. Cl. 232—35 **2 Claims**



The box has a vertically slideable flag normally housed at the back thereof and maintained therein by registration of the rear end of an elongated rod in a hole in the flag. The rod has a block-like magnet on the front end thereof adjacent the closed box door. The latter has on the inside thereof a magnetizeable block complementary to and, when the door is closed, in alignment with the magnet. When the door is opened the magnetic attraction between the two blocks causes the rod to be pulled forward out of the hole in the flag to let the flag drop to exposed position. After the flag is pushed back up to its original position a spring restores the rod to registration in the hole in the flag.

3,675,846
CONTINUOUS FLOW CENTRIFUGE HEAD CONSTRUCTION
Kenneth Gus Drucker, Astoria, Oreg., assignor to Bi[illegible] Consultants, Inc., South Gate, Calif.
Filed June 15, 1970, Ser. No. 46,255
Int. Cl. B04b 9/12
U.S. Cl. 233—26 **3 Claims**



An improved centrifuge head is provided which is constructed to permit continuous flow of a liquid through the head, whereby sediment and other constituents of the liquid may be removed by the centrifugal forces within the head as the liquid passes therethrough.

3,675,847

TAXIMETER HAVING A STAMPING MECHANISM

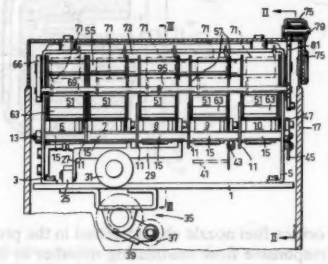
Borgstrom Gote Ingvar, Svangsta, Sweden, assignor to Abu Aktiebolag, Svangsta, Sweden

Filed June 24, 1970, Ser. No. 49,309

Claims priority, application Sweden, June 24, 1969, 8943/69

Int. Cl. G07b *13/00*

U.S. Cl. 235—30 1 Claim



A taximeter has register mechanisms for registering data regarding each driver's work shift, for example the total amount of money earned during his work shift. The register mechanisms have printing type digit wheels and the taximeter has a stamping mechanism operated by an external manual lever, enabling the driver to print on a paper the setting of the register mechanisms at the beginning and the end of his work shift.

3,675,848

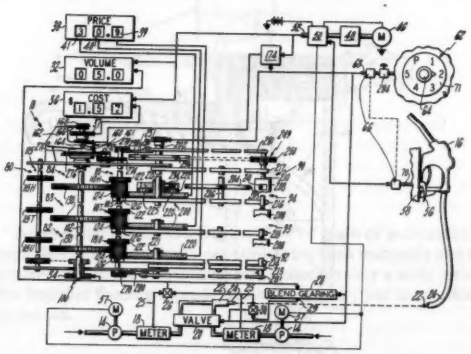
VARIATOR

Raymond H. Devanney, Winsted, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Aug. 17, 1970, Ser. No. 64,277

Int. Cl. B67d *5/22*

U.S. Cl. 235—61 M 24 Claims



Multiple product gasoline dispensing apparatus having a variator presettable for programming a three-place unit volume price for each of the gasoline products. Three coaxial drive ratchet assemblies each comprising a bank of angularly settable ratchet wheels are provided for programming the units, tens, and hundreds places of the unit volume price. A stepping unit pivotally mounted to be oscillated about the axis of the coaxial ratchet wheels comprises a drive pawl for each of the ratchet wheels and three coaxial selector cams for the three ratchet assemblies for selectively activating the pawls for driving corresponding ratchet wheels as the stepping unit is oscillated. The selector cams are connected to be angularly set by a product selector knob and the indexing unit is connected to be oscillated to set the variator in accordance with the angular settings of the selected ratchet wheels when the gasoline cost and volume registers are reset just prior to the commencement of a fuel delivery.

3,675,849

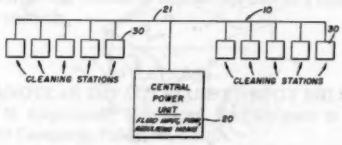
IN-PLANT CLEANING SYSTEM

Joseph S. Boylan, Ashland, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed April 6, 1970, Ser. No. 25,989

Int. Cl. B05b *9/00*

U.S. Cl. 239—124 6 Claims



An in-plant cleaning system having a centrally located power unit and a plurality of outlet cleaning stations. The power unit consists basically of a motor, a pump and a conventional unloader. The system is provided with at least one combination of a conventional surge suppressor, a check valve and means to vent reverse pressure slowly back into the system to prevent water hammer. In the preferred embodiment one such combination is provided at each outlet cleaning station along with the cleaning gun.

3,675,850

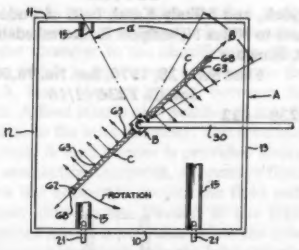
REACTIVELY DRIVEN ROTARY LIQUID DISTRIBUTOR

Herman G. Ebert, 522 Broadview Road, Upper Darby, Pa.

Filed June 22, 1970, Ser. No. 47,987

Int. Cl. B05b *3/06*

U.S. Cl. 239—254 5 Claims



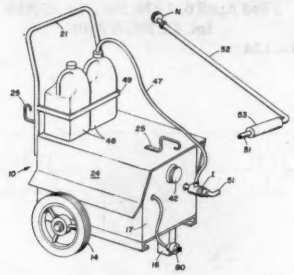
A reactively driven rotary liquid distributor or sweep, of particular use for cleaning generally rectangular filter beds, delivers a patterned spray. Two sets of nozzles, each fed by a separate conduit, are mounted on radially extending sweep arms. One set provides the reactive force and distributes liquid in a generally circular pattern. The other set, mounted on the ends of the arms, selectively covers the corner areas. Liquid flow to the conduits is through the central suspension on which the arms are rotatably mounted. The suspension includes an integral multi-port rotary valve and, as the suspension rotates, the conduits supplying the corner-directed nozzles move in and out of alignment with arcuately extending peripherally spaced ports. Thus, liquid is supplied to these nozzles only when the ends of the sweep arms are proximate the corners of the filter bed. The other nozzles operate throughout 360° of sweep rotation. Liquid is therefore distributed in a rectangular or square pattern which conforms to the shape of the filter bed.

3,675,851

HIGH PRESSURE WASHER WITH DETERGENT ON-OFF NOZZLE

Michael J. Merfeld, Cedar Rapids, and Merlyn R. Truesdell, Sioux City, both of Iowa, assignors to Century Engineering Corporation, Cedar Rapids, Iowa

Filed Feb. 18, 1971, Ser. No. 116,486
Int. Cl. B05b 7/30
U.S. Cl. 239—318 6 Claims



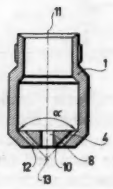
A portable high pressure washer is equipped with a length of hose and a turret nozzle having several manually selectable discharge orifices. One of the latter, the detergent orifice, is of greater size, while the remainder, the washing orifices, are of lesser size, than the throat diameter of a detergent injector located at the washer remote from the nozzle. Injection of detergent can thereby be controlled by the nozzle without the need of other means to activate or deactivate the injector, and at the same time the pressure of the detergent issuing from the nozzle is reduced.

3,675,852

OUTER NOZZLE FOR THE CUTTING HEAD OF A FLAME CUTTER

Jeno Hajduk, and Mihaly Katai, both of Budapest, Hungary, assignors to Nikex Nehezipari Kulkereskedelmi Vallalat, Budapest, Hungary

Filed Sept. 28, 1970, Ser. No. 76,007
Int. Cl. F23d 11/16
U.S. Cl. 239—422 1 Claim



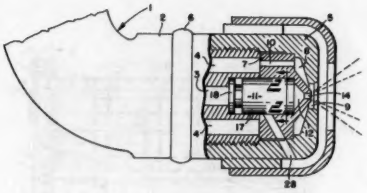
A cutting head for a flame cutter feeds oxygen through a central nozzle and a mixture of oxygen and natural gas through a ring of peripheral nozzles that converge at a point on the axis of the oxygen stream at an angle of 25° to 45°. The peripheral nozzles are fed from an annular mixing chamber at least five times the volume of the inner nozzle, and the total cross-sectional area of the peripheral nozzles is from two to eight times the cross-sectional area of the discharge orifice of the inner nozzle.

3,675,853

FUEL NOZZLE WITH MODULATING PRIMARY NOZZLE

Dominic J. Lapera, Chardon, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 25, 1971, Ser. No. 118,630
Int. Cl. B05b 1/34
U.S. Cl. 239—464 13 Claims



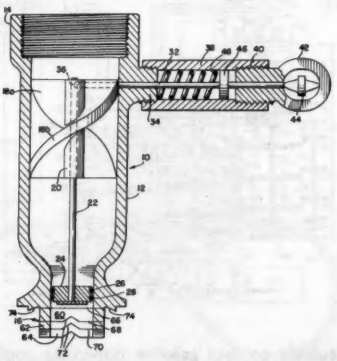
A dual orifice fuel nozzle characterized in the provision of a pressure responsive flow modulating member in the primary fuel supply passage upstream of the spin passages and spin chamber of the primary discharge orifice, said member being operative in response to increasing primary fuel pressure to decrease the flow through the primary discharge orifice and to increase the angle of the fuel spray pattern therefrom once engine ignition and/or some low power condition is reached.

3,675,854

SNAP-OFF TAB NOZZLE

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Dec. 30, 1970, Ser. No. 102,651
Int. Cl. B05b 1/34
U.S. Cl. 239—490 4 Claims



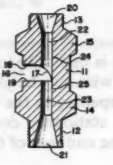
A snap-off tab nozzle consisting of a hollow body member having an inlet adapted for connection to a source of fluid, and an outlet for discharging the fluid. The outlet is formed by at least one separable tab to enable its axial length to be varied to regulate the discharge angle of the fluid.

3,675,855

SPRAY DISCHARGE NOZZLE

Charles C. Harwood, Elgin, and William E. Holtz, Jr., Chicago, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Continuation-in-part of Ser. No. 1,355, Jan. 8, 1970, abandoned. This application April 12, 1971, Ser. No. 133,313
Int. Cl. B05b *1/26*
U.S. Cl. 239—597 6 Claims



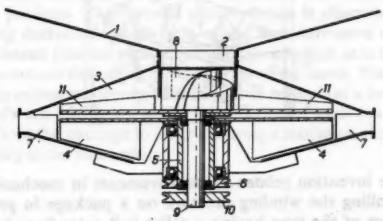
A side discharge liquid spray nozzle is shown having an air passage and a liquid passage entering from opposing sides thereof and meeting and impinging one on the other in the bottom of a groove, the groove being an external plain groove extending across the body of the nozzle portion.

3,675,856

MACHINE FOR DISTRIBUTING SEED, FERTILIZER AND OTHER GRAIN OR POWDER MASSES

Finn Kverneland, Brumunddal, Norway, assignor to Globus Maskinfabrikk A/S, Brumunddal, Norway

Filed Aug. 10, 1970, Ser. No. 62,444
Claims priority, application Norway, Sept. 1, 1969, 3487/69
Int. Cl. A01c *15/04*
U.S. Cl. 239—654 4 Claims



An impeller for controlling the flow of grain or pulverulent materials between a container containing such materials and a centrifugal fan for distributing said materials over a wide area, the impeller feeding a predetermined quantity per revolution to the fan.

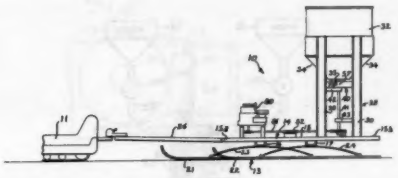
3,675,857

SNOW VEHICLE FOR DISTRIBUTING DUST ON SNOW SURFACES

Hubert Bourton, Star Route, Waterville, Wash.

Filed Dec. 23, 1970, Ser. No. 100,878
Int. Cl. A01c *17/00*
U.S. Cl. 239—668 5 Claims

A snow vehicle is described for distributing dust in a thin layer on a snow surface behind the vehicle as the vehicle is propelled over the snow surface to cause the snow to melt sooner than normal. The snow vehicle has an elevated hopper with a rotating rotor positioned below the hopper to receive the dust. The rotor is partially enclosed with a housing to develop a directional flow of air through the housing as the



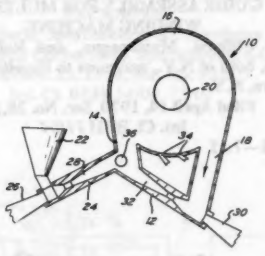
rotor is rotating to flow the dust from the rotor horizontally rearward from the vehicle to deposit the dust in a thin layer on the snow surface.

3,675,858

ANGULAR IMPACT FLUID ENERGY MILL

Nicholas N. Stephanoff, Haverford, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 18, 1970, Ser. No. 47,357
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 7 Claims



A fluid energy mill having an inlet chamber, a classification chamber, and an upstack and downstack connecting opposite ends of the inlet chamber to the classification chamber. The inlet chamber, which is positioned angularly to the upstack and downstack, has a Venturi portion between the upstack and downstack. A feed inlet is also positioned angularly to the upstack as well as to the inlet chamber. This feed inlet also has a Venturi portion. A feed hopper is provided above the feed inlet and is in connection therewith. A pressure fluid nozzle is provided below the hopper to project the fluid and particles from the hopper through the Venturi in the feed inlet. A similar but opposed nozzle is provided below the downstack to project fluid through the Venturi in the inlet chamber toward the upstack. The fluid and particles propelled by each nozzle meet and impact below the upstack and the resultant fluid and particles pass upwardly through the upstack and centrifugally move through the mill where the lighter particles are centrifugally separated from the heavier particles and exhausted from the mill.

3,675,859

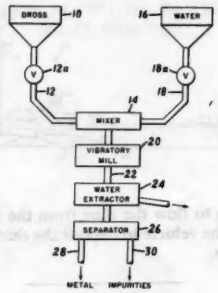
METHOD AND APPARATUS FOR SEPARATING PARTICULATE MATERIALS

Chauncey L. Mitchell, III, Fair Haven, N.J., assignor to Electronic Assistance Corporation, Red Bank, N.J.

Filed July 6, 1970, Ser. No. 52,506
Int. Cl. B02c *14/14*
U.S. Cl. 241—20 12 Claims

A mixture of relatively malleable and relatively friable materials in particulate form within a given initial size range is

separated into a fraction composed essentially of the malleable materials and a fraction composed essentially of the friable materials by first subjecting the mixture, in a vibratory mill, to forces effective to break up the particles of the friable fraction



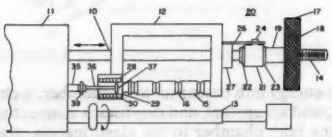
into sizes constituting a range substantially below the initial size range without substantially breaking up the particles of the malleable material and then separating the mixture according to size.

3,675,860

WIRE GUIDE ASSEMBLY FOR MULTIPLE COIL WINDING MACHINE

Thomas J. Clifford, Massapequa, and Robert C. Nelson, Bethpage, both of N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed April 14, 1970, Ser. No. 28,329
Int. Cl. H01f 11/04
U.S. Cl. 242—7.11 **7 Claims**



Disclosed is an improved wire guide assembly for multiple coil winding machines which have a laterally driven guide shaft. To permit precise lateral adjustment of the position of a wire guide support, an annular member is engaged on a threaded portion of the guide shaft and coupled to to the wire guide support means so that lateral movement of the annular member along the threaded portion of the shaft is translated into corresponding lateral movement of the wire guide support relative to the shaft and to a stationary multiple coil from. When used in conjunction with an improved index assembly, which is also disclosed, coil margin length and winding length can readily and accurately be determined and adjusted for different size coils.

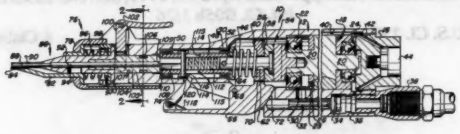
3,675,861

CONDUCTOR WRAPPING TOOL

William J. Baker, Reed City, and Richard J. Hurst, Hersey, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Jan. 14, 1970, Ser. No. 2,714
Int. Cl. H01f 11/04
U.S. Cl. 242—7.17 **3 Claims**

A motor driven tool for making wrapped connections of electrical conductor wire about a terminal which includes a wrapping attachment for use with relatively small diameter conductor wire. The wrapping attachment includes a rotatable bit and sleeve assembly in which the sleeve is fixed to the bit for rotation but is axially extendable and retractable with respect to the bit face for receiving and positioning a length of conductor to be wrapped. The attachment includes a digitally



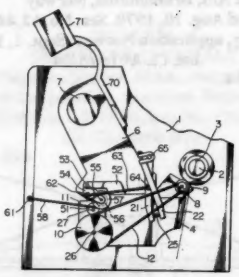
operated lever which is operable to axially extend the sleeve whereby a conductor wire may be placed transversely in a pair of longitudinal slots opening to the end of the sleeve. The attachment includes a stationary conductor support member positioned adjacent the end face of the bit.

3,675,862

DEVICE FOR CONTROLLING YARN WINDING PRESSURE ON A PACKAGE

Shin Tsukuma, No. 7-13, Sakuragaoka, Itami-shi Hyogo-ken, and Akio Higuchi, No. 24,10,1-chome, Akutagawa cho, Takatsuki-shi, Osaka-fu, both of Japan

Continuation-in-part of Ser. No. 608,150, Jan. 9, 1967, Pat. No. 3,510,078. This application Sept. 5, 1969, Ser. No. 855,597
Int. Cl. B65h 54/02, 54/28
U.S. Cl. 242—18 R **6 Claims**



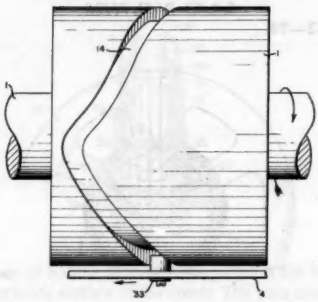
The invention relates to improvements in mechanism for controlling the winding pressure on a package in precision winders of the type having a roller bail extending along the whole length of the package being wound. Increases in the diameter of the winding package causes the roller bail to contact the package which results in rotation of the roller bail. The rotation of the roller bail is transmitted through a speed reduction device to a roller bail receding or retracting means which effects movement of the roller bail away from the peripheral surface of the package. The means for effecting the retracting movement of the roller bail is materially simplified for easier resetting of the device at the time of package doffing and for reducing contacting pressure between the package and the roller bail to an extremely low point. A linear flexible connector is fixed at one end to the frame of the machine and at its other end to a winding drum rotatably mounted on a pivotal arm that supports the roller bail. Slight rotation of the roller bail due to contact with the periphery of the package is transmitted through the speed reduction device to rotate the winding drum to wind up thereon the linear connector. The shortening of the linear flexible connector by the winding operation causes the arm supporting the roller bail to swing about its pivot very slightly to thus move or retract the roller bail away from the package.

3,675,863

YARN WINDING APPARATUS BARREL CAM AND METHOD OF MAKING THE CAM GROOVE

Richard L. Akers, Wilmington, Del., and Donald W. Oplinger, Lynnfield, Mass., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1970, Ser. No. 10,493
Int. Cl. B65h *54/30*
U.S. Cl. 242—43 **5 Claims**



A yarn winding apparatus for winding generally cylindrical cross-wound packages in which the yarn wave in the extremity of each reversal has the smallest possible radius it will retain on the package. The apparatus includes a rotatably driven barrel cam having a generally continuous helical groove in its surface, a traverse guide riding in the groove through which yarn passes at an angle in an uncontrolled length to a point of tangency on a driven cylinder spaced from the guide. The groove has a profile comprising successive helical, reversal curve and helical portions. The reversal curve portion is characterized by being derived from the sum of the first derivative of the yarn reversal plus the product of the uncontrolled yarn length and the second derivative of the yarn reversal curve. The yarn package comprises layers of helical coils wound on a bobbin. The coils are laid down at the mid-portion of their reversals throughout the package in a curve having a minimum radius R according to the expression:

$$R = r/u$$

where r is the radius of the bobbin and u is the coefficient of friction of the yarn.

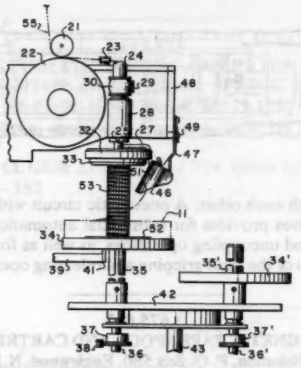
3,675,864

NOVEL YARN PACKAGE AND APPARATUS FOR PRODUCING SAME

Paul W. Eschenbach, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 23, 1970, Ser. No. 92,078
Int. Cl. B65h *51/00, 57/00*
U.S. Cl. 242—47 **3 Claims**

A yarn package with a high degree of uniformity in the yarn density throughout the package comprising an ascending series of generally heart shaped yarn loops disposed around a central core with a portion of each loop adjacent the core being disposed in a generally reflex angle configuration and the apex of the angle adjacent the core and another portion of



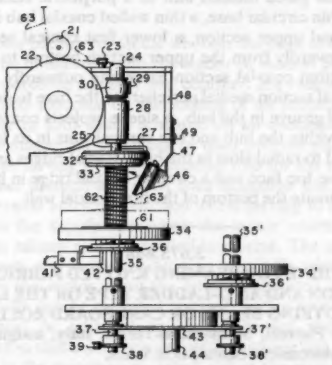
each loop being adjacent the periphery of the package. Also, a novel method and apparatus for producing such a package.

3,675,865

APPARATUS FOR INCREASING THE DENSITY OF YARN PACKAGES

Paul W. Eschenbach, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 23, 1970, Ser. No. 92,079
Int. Cl. B65h *54/00, 75/02*
U.S. Cl. 242—47 **6 Claims**



Apparatus for winding a yarn package with increased density including a yarn supply, rotatable yarn distributing means, rotatable yarn collecting means including a supporting base and a central core, and means associated with the turntable to raise and lower the turntable periodically in each revolution thereof.

3,675,866

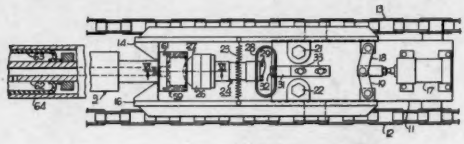
APPARATUS FOR HANDLING PNEUMATIC WEB ROLL WINDING SHAFTS

Donald L. Lemke, Marathon, and Ronald D. Ostrander, Wausau, both of Wis., assignors to Murray Machinery, Inc., Wausau, Wis.

Filed Dec. 28, 1970, Ser. No. 101,746
Int. Cl. B65h *75/02*
U.S. Cl. 242—55 **10 Claims**

Apparatus for inflating and deflating pneumatic winding shafts and for pulling them from and inserting them into web

roll cores comprises a face-type air coupling mechanism and a jaw-type shaft gripping mechanism which maintains complementary components of the air coupling mechanism in sealing



contact with each other. A pneumatic circuit with associated control valves provides for substantial automation of the air coupling and uncoupling operations, as well as for substantial automation of the shaft gripping and releasing operations.

3,675,867

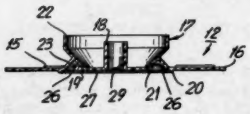
MAGNETIC TAPE SPOOL AND CARTRIDGE

Nathan L. Solomon, P. O. Box 550, Englewood, N.J.

Filed June 12, 1970, Ser. No. 45,812

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **6 Claims**



The tape spool in an endless magnetic tape cassette is an integrally one piece molded unit of a polymeric resin and includes a thin circular base, a thin walled coaxial hub including a cylindrical upper section, a lower first conical section extending inwardly from the upper section bottom to the base and a bottom coaxial section extending outwardly from the first conical section medial periphery to the base to delineate a peripheral groove in the hub. A sleeve projects coaxially from the base within the hub and has vertical slots in its lower part connected to radial slots in the base. Radial ridges are formed on the base top face and a circular coaxial ridge in its bottom face proximate the bottom of the first coaxial wall.

3,675,868

MACHINE FOR BEAMING KNITTED FABRICS OF COMMON AND ANTI-LADDER TYPE OR THE LIKE ON TO DYEING BEAMS OR CARDBOARD ROLLERS

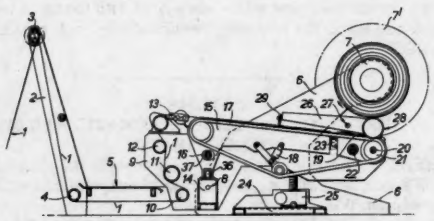
Giuseppe Piattelli, Montecatini-Terme, Italy, assignor to Officine Meccaniche Santa Lucia S.A.S.

Filed April 22, 1969, Ser. No. 818,342

Claims priority, application Italy, April 29, 1968, 33011A/68

Int. Cl. B65h *17/08*

U.S. Cl. 242—67.1 **3 Claims**



Apparatus for winding knitted fabrics onto a beam or roll comprises an endless conveyor feeding to a cylinder which is in peripheral contact with the growing roll of fabric on the beam and also tangential to the endless conveyor. As the diameter of the roll of fabric on the beam increases, the cylinder is pushed away from the beam and this actuates a control to move the conveyor away from the beam so that the conveyor and the cylinder and the periphery of the roll of fabric maintain their same general relation to each other.

3,675,869

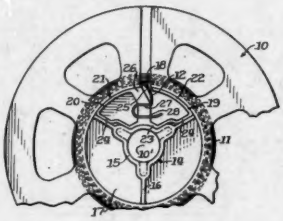
FILM RETAINING INSERT FOR REELS

Peter H. Grant, Lincolnwood, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed April 16, 1970, Ser. No. 29,204

Int. Cl. B65h *75/28*

U.S. Cl. 242—74 **4 Claims**



A film retaining insert for reels comprises a unitary molded insert that is provided with either a slot or a slot and pin arrangement capable of anchoring the end of a strip of film to facilitate winding film from or onto the hub of the reel to which the insert is secured. The insert is shaped to fit within the space between the axis and the hub of the reel, and has an entry slot adapted to register with a threading slot extending transversely through the hub of the reel. The end of a strip film to be wound on the reel is threaded through the threading slot and into the entry slot of the insert, and then anchored thereto. The insert holds the film end firmly against accidental displacement from the reel, and thereby facilitates winding the film from or onto the hub of the reel.

3,675,870

ELECTRICALLY OPERATED FISHING REEL

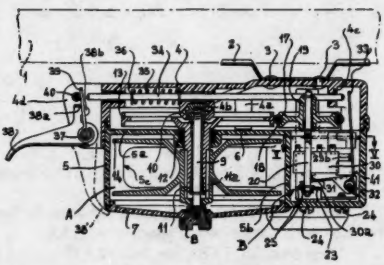
Jean-Louis Ride, 4 Rue Turenne, Geispolsheim-Gare, and Roland Bellaton, 8 Place Sainte-Luc, Sainte-Foy-Les-Lyon, both of France

Filed July 9, 1970, Ser. No. 53,415

Claims priority, application France, July 11, 1969, 6923628

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.1 A **10 Claims**



An automatic fishing reel for fly fishing having a constant rewinding torque and constant angular speed. The reel is provided with a small electrical machine which functions as a

dynamo brake to control the unwinding of line from the reel drum and as a motor to rewind it. Preferably the electric machine is of the inducer type having a permanent magnet and controlled by a switch to connect it to a battery to cause it to function as a motor, or short circuited directly or through a resistance to function as a dynamo brake.

3,675,871

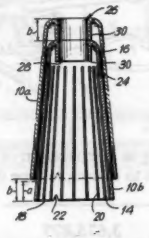
YARN CONES

Herbert Frank Heyden, 154 Boulevard, Pelham, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,442

Int. Cl. B65h *75/10*

U.S. Cl. 242—118.3 **7 Claims**



Yarn cones of hollow tapered configuration for supporting yarn at an exterior surface of the cones. The yarn cone has opposed ends one of which is smaller than the other and at the smaller end the yarn cone carries an annular member which projects axially from the smaller end of the cone. In this way when identical cones of this construction are nested the annular member of one cone will engage the smaller end of the body of an adjoining cone to limit the extent of nesting of the cones and thus prevent them from becoming wedged to each other.

3,675,872

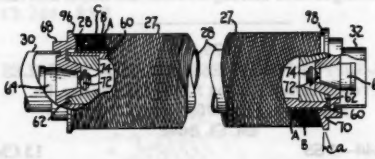
GLASS FIBER FORMING AND SUPPLY PACKAGE

Warren W. Drummond, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 696,791, Jan. 10, 1968, Pat. No. 3,535,097. This application April 1, 1970, Ser. No. 24,625

Int. Cl. B65h *55/02*

U.S. Cl. 242—174 **2 Claims**



Forming packages of glass fiber strand containing a substantially uniform thickness of wound strands are provided by oscillating the strand and winding the oscillated strand in a plurality of superimposed layers on a rotating cylindrical surface bounded by axially spaced surfaces that extend outward from the strand-collecting surface in gradually diverging relationship. The ends of the package are formed by winding the strand against the diverging surfaces each time a layer of strand is completed. After winding, the gradually diverging surfaces are removed to provide a forming package having substantially cylindrical inner and outer surfaces and end surfaces which extend outward in gradually diverging relationship from the inner surface of the package. The forming package, when dried, is self-supporting. A plurality of these forming packages are horizontally disposed in rows supported one above the other with the lower rows supporting the upper rows to provide a supply of a plurality of individual strands which are withdrawn from the interiors of the packages and further processed.

3,675,873

CINEMATOGRAPHIC APPARATUS

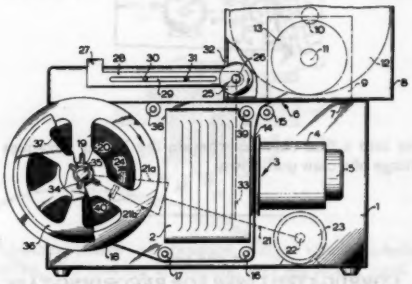
Marco Alfano, Turin, Italy, assignor to Silma, Turin, Italy

Filed Sept. 15, 1970, Ser. No. 72,285

Claims priority, application Germany, Sept. 18, 1969, P 19 47 149.9

Int. Cl. G03b *23/04;* **B65h** *17/14;* **G03b** *1/02*

U.S. Cl. 242—192 **9 Claims**



A motion picture projector wherein the core of the takeup reel can be connected with the leader of motion picture film which is stored on a supply reel confined in a magazine which is removably mounted on the housing of the projector or with the leader of film which is stored on an unconfined supply reel. The magazines which can be used with the projector are of the type having a fixedly mounted stub for the core of the supply reel therein, and each such magazine has a window which permits entry of a friction wheel serving to rewind the film onto the supply reel when the motor which normally drives the takeup real is operated in reverse. The unconfined supply reels are to be mounted on a spindle which can be driven by the motor when the latter is operated in reverse. Such spindle can be mounted coaxially with a spindle for the takeup reel or adjacent to the space for reception of magazines so that a properly inserted magazine can disengage a clutch in the transmission which drives the spindle for unconfined supply reels.

3,675,874

FILM THREADING MECHANISM FOR CINEMATOGRAPHIC APPARATUS

Wolfgang Riedel, Winnenden, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Unterturkheim, Germany

Filed Aug. 7, 1970, Ser. No. 62,036

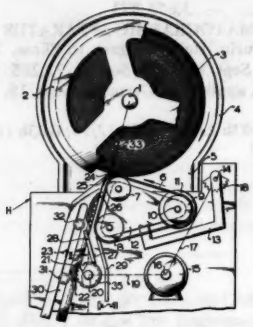
Claims priority, application Germany, Aug. 14, 1969, P 19 41 319.5

Int. Cl. B65h *17/24*

U.S. Cl. 242—192 **9 Claims**

Automatic film threading mechanism for use in motion picture projectors wherein a motor-driven belt can rotate the supply reel in a direction to pay out the convoluted film. The leader of the outermost convolution is intercepted by the tip of a slide reciprocable radially of the supply reel by a transmission including a friction clutch which insures that the tip en-

gages the outermost convolution with a given force irrespective of the diameter of such convolution. The slide directs the leader into a film channel wherein the leader advances into the range of a claw pull-down



3,675,875

CORRUGATED LINER FOR RECORDING TAPE CASSETTES

Paul Gordon Schmidt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 12, 1970, Ser. No. 80,049
Int. Cl. G11b *23/08*
U.S. Cl. 242—199 2 Claims

A recording tape cassette sheet liner of corrugated thermoplastic film, preferably polyethylene terephthalate film, wherein the corrugation ratio is between 1.5 and 15, preferably between 2 and 6, and wherein there are from 5 to 50 corrugations per inch. The cassette has such a liner on at least one side of the tape spools.

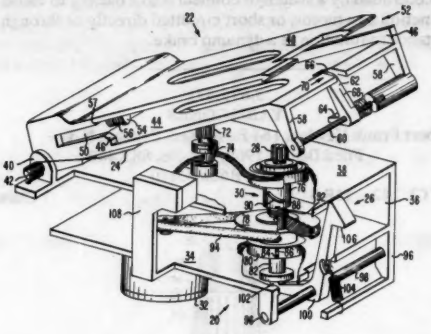
3,675,876

AUTOMATICALLY DISENGAGING, TAPE HANDLER

Harold M. Frederick, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed April 19, 1971, Ser. No. 135,249
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—198 18 Claims

A tape handler is provided having a drive coupling mechanism, a part thereof being axially translatable in response to an end-of-tape condition. The handler includes a pivotally mounted carrier forming a pocket to receive and retain a tape cassette, the carrier being releasably secured to the body of the handler, the translatable part having the function of initiating both the release of the cassette and of the carrier, the latter resulting in a separation of the carrier from the handler body sufficient to uncouple tape drive.

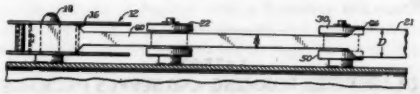


3,675,877

MICROFILM TRANSPORT SYSTEM AND TRAILING LEADER

Chester S. Rempala, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed March 11, 1970, Ser. No. 18,430
Int. Cl. G11b *15/29, 15/24*
U.S. Cl. 242—209 5 Claims



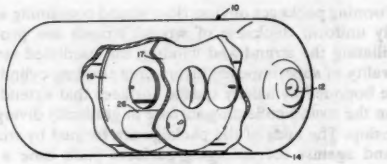
A microfilm trailing leader and transport system for terminating the driving relationship between the film and said system to thereby eliminate excessive strain on the connection between the trailing leader and the spool hub. The invention is also directed to a novel drive capstan which eliminates the frictional engagement between the capstan and the film information bearing area to thereby increase the useful film life.

3,675,878

LIFE-SUPPORTING PRESSURIZABLE VEHICLES

Harald J. Von Beckh, P. O. Box 1220, Warminster, Pa.

Filed Sept. 21, 1970, Ser. No. 74,056
Int. Cl. B64c
U.S. Cl. 244—1 SS 13 Claims



Spacecraft and aircraft life compartments suitable for protecting the occupants from accidental and sudden decompression during space or high altitude flight. The craft is divided into discrete compartment connected by hatchways which selectively close upon decompression in any one compartment

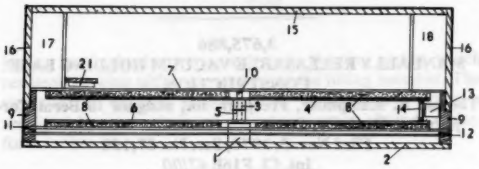
in order to maintain pressure integrity in the other compartments. An air lock and lock valves between compartments enable emergency intravehicular escape and rescue from a decompressed compartment and ensure continued flight control pending corrective action.

3,675,879

METHOD AND MEANS FOR CREATING ARTIFICIAL GRAVITY IN SPACECRAFT

Harry B. Fuchs, 242 Prospect St., Farmingdale, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,558
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SC **6 Claims**



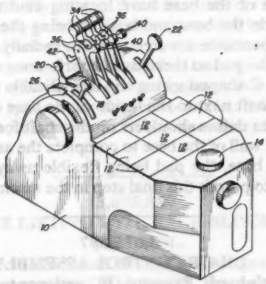
Prolonged weightlessness in space congests the body organs of astronauts and is detrimental to the health thereof; while the discipline of physiotherapy teaches that electrostatic treatments decongest the body organs of human beings. An electrostatic generator at the underside of a floor in a space vehicle produces electrostatic energy which radiates from the topside thereof to attract astronauts in their footwear and clothing, and their implements, to the topside of the floor in simulation of natural gravity. The electrostatically-induced artificial gravity tends to minimize and offset the natural gravity differential effects on bodies in or on a space vehicle. An oppositely-turning rotor counters the torque reaction produced by a rotor forming part of the electrostatic generator. The oppositely-turning rotor also generates electric energy for useful purposes.

3,675,880

MODULAR AIRCRAFT PEDESTAL

John H. Koch, Acton, Mass., assignor to Atkins & Merrill, Inc., Marlboro, Mass.

Filed Dec. 11, 1970, Ser. No. 97,073
Int. Cl. B64c *13/04*
U.S. Cl. 244—83 R **7 Claims**



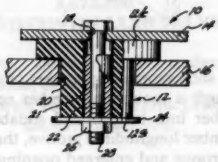
A standardized aircraft flight and engine control assembly in modular form adapted to be incorporated in an aircraft pilots' control pedestal in place of or in addition to the actual aircraft parts. The assembly is made up of one or more control modules including levers for controlling devices such as flaps, spoilers, brakes, elevator trim, and the like, mounted in spaced relation on a chassis designed to fit within a control pedestal. The chassis includes means for holding and supporting an engine control module comprising a support and a plurality of similar engine control lever assemblies mounted on the support in side-by-side relation. The support is designed to hold a variable number of control lever assemblies, one for each engine, so that the dimensions of the overall assembly can be standardized, yet the component modules varied in number and function as required for different aircraft.

3,675,881

BUSHING FOR VIBRATION-ISOLATING MOUNTING

William F. Caldwell, Portland, Oreg., assignor to Huntington Rubber Mills, Portland, Oreg.

Filed Nov. 4, 1970, Ser. No. 86,761
Int. Cl. B62d *23/00, 27/04*
U.S. Cl. 248—9 **2 Claims**



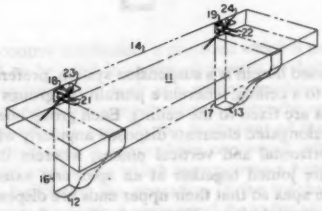
A bushing-sleeve combination for a vibration-isolating mounting. The bushing is resilient, and the sleeve rigid. The bushing includes an elongated cylindrical body portion having along its entire length a uniform outside diameter. One end of the body portion joins with a radially outwardly projecting flange portion. An elongated axially central bore, which has a substantially uniform diameter along its length, extends through the body and flange portions, and is adapted to have the sleeve slidably mounted therein.

3,675,882

WALL SHELF MOUNTING

Douglas D. Dibble, P.O. Box 1175, La Mesa, Calif.

Filed Sept. 8, 1970, Ser. No. 70,019
Int. Cl. A47g *29/02*
U.S. Cl. 248—235 **1 Claim**



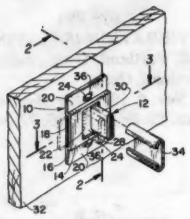
A wall shelf mounting having first and second shelf supporting brackets attached to a bottom surface thereof and flush with the back surface of the shelf for abutting a wall; first and second shelf-hanging brackets having one surface resting on the top surface of the shelf and a second surface at right angles thereto resting against the back surface of the shelf, the first part having a nail hole therein and the second part having a plurality of nail holes therein for nailing the hanging brackets to the shelf; the top holes being for receiving a nail at an oblique angle toward the wall and beneath the second surface of the brackets for hanging the entire structure on the wall.

3,675,883

ADJUSTABLE BRACKET ASSEMBLY FOR USE AS A REAR DRAWER SLIDE BRACKET AND THE LIKE

Frank Holmes, Buena Park; Henry Arias, Jr., Rowland Heights, and George Read, Glendora, all of Calif., assignors to Ajax Hardware Manufacturing Corporation, City of Industry, Calif.

Filed Sept. 17, 1970, Ser. No. 73,108
Int. Cl. A47b *88/00*
U.S. Cl. 248—251 7 Claims



A rear door slide supporting bracket of a bracket member is received through a mounting member opening bringing the bracket member into longitudinal slidable nesting within a mounting member longitudinal groove, the mounting member longitudinal groove and enlarged opening permitting relative longitudinal slidable adjustment of the bracket.

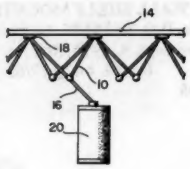
Both the mounting and bracket members may be formed of plastic integrally joined by a flexible strap in both dissassembled and assembled positions.

3,675,884

SUSPENSION SYSTEM

John M. Storyk, 254 W. 4th St., New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,763
Int. Cl. F16m *13/00*
U.S. Cl. 248—317 2 Claims



Disclosed herein is a suspension system, preferably for connection to a ceiling, wherein a plurality of groups of elongated elements are fixed to the ceiling. Each group comprises three of such elongated elements disposed angularly with respect to both horizontal and vertical planes, wherein the three elements are joined together at an apex and extend upwardly from the apex so that their upper ends are disposed in a common horizontal plane. Thus, each group of elements forms a tetrahedron having three open sides defined by planes passing through the elements of the group, and having a fourth side defined by a plane passing through their upper ends.

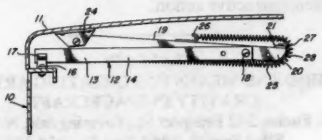
3,675,885

SPRING-LOADED FOLDING ARM

Adrian L. Shute, 2541 E. Washington St., Phoenix, Ariz.

Filed Aug. 20, 1970, Ser. No. 65,643
Int. Cl. F16m *13/00*
U.S. Cl. 248—351 2 Claims

A spring-loaded folding arm comprising two pivotally connected leg portions, with a spring having one end connected to each leg and arranged to urge the arm into the extended position. In a particular application, shown and described, the



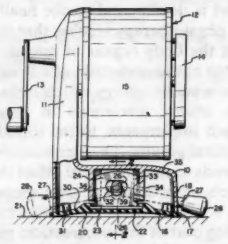
arms are employed between a stationary structure and a movable structure to provide a substantially counterbalanced extensible mechanism.

3,675,886

MANUALLY RELEASABLE VACUUM HOLDING BASE CONSTRUCTION

Thomas R. Kampmier, Freeport, Ill., assignor to Berol Corporation, Danbury, Conn.

Filed Nov. 5, 1970, Ser. No. 87,150
Int. Cl. F16b *47/00*
U.S. Cl. 248—363 3 Claims



The generally rectangular open bottom base rests on a generally rectangular resilient pad, and a yoke connected with the pad extends upwardly from the central portion thereof for vertical movement in the turning of a crank operating through a slot in the yoke. This crank is at the mid-portion of a cross-shaft disposed parallel to the pad and supported for rotation in registering bearing holes provided in opposed walls of the base, a manually operable lever bent nearly at a right angle to one end of the shaft outside the base serving to turn the shaft and crank to cup the central portion of the pad for suction cup action. Small projections molded integral with the pad at the four corners of the base have locating abutment with these corners inside the base and besides being thereby concealed for good appearance are free to move radially inwardly in the cupping of the pad so there is no interference with this operation. Also, a C-shaped spring clip is applicable to a cutout portion of the shaft next to the inside of the base at the lever end of the shaft to define shoulders on the shaft for abutment with the adjacent wall of the base to complete the assembling of the shaft in the base, the pad being flexible away from the base sufficiently to permit this final step in the assembling.

3,675,887

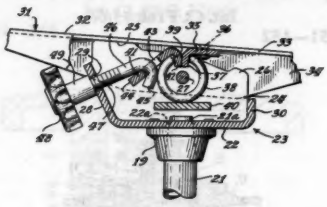
CHAIR CONTROL ASSEMBLY

James R. Meinhardt, Evanston, Ill., assignor to The Seng Company

Filed Jan. 14, 1971, Ser. No. 106,440
Int. Cl. F16m *11/20*
U.S. Cl. 248—378 11 Claims

A control for a spring biased tilting chair such as an office swivel chair or a platform rocker has a slotted spring ring means which is either a set of aligned slotted spring rings or a

single long slotted spring ring or sleeve. A tension adjusting member on the base or head piece has a finger which projects into the slot, and there is a tension member on the tilting member which also has a finger projecting into the slot. The tension adjusting member is operatively connected to an adjusting hand wheel to vary prestress in the ring means, which resiliently resists tilting movement of the tilting member. The structure is equally applicable to an executive chair a secretarial posture chair, an executive posture chair or a platform rocker.

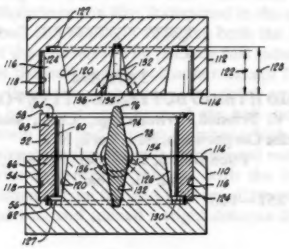


3,675,886

APPARATUS FOR MOLDING A SEAT IN A VALVE BODY

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Filed Feb. 24, 1970, Ser. No. 13,622
Int. Cl. B22c 9/24; B29d 23/00
U.S. Cl. 249—57 **10 Claims**



A method and apparatus for molding an elastomeric seat and stem seal in a valve body, wherein a pair of mold sections, each mold section having a cavity formed therein, are secured about a valve body having the valve member rotatably supported therein by at least one stem journaled in a mating aperture in the valve body. The cavities in the mold sections are shaped to cooperate with the valve body to define a space therebetween wherein the uncured elastomeric material is to be forced, the space being shaped to surround a portion of the stem and to define the limits of the elastomeric seat and stem seal.

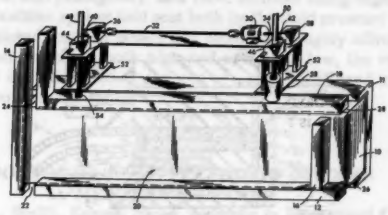
3,675,889

TOP BLOCK LIFTING WITH BACK BLOCK LOADING CONTROL

Richard O. Peck, Elk Grove Village, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Aug. 24, 1970, Ser. No. 66,499
Int. Cl. B29c 1/16
U.S. Cl. 249—82 **2 Claims**

The mold includes a pair of side blocks between which are engaged top, bottom and end inner blocks to define a casting cavity. The top block is moved into engagement with an end block by screw jacks driven by a motor with a spring provided between one of the screws and the top block to accommodate thermal expansion. Load sensing means are provided to shut down the motor after a particular load between the top and an end block has been achieved.

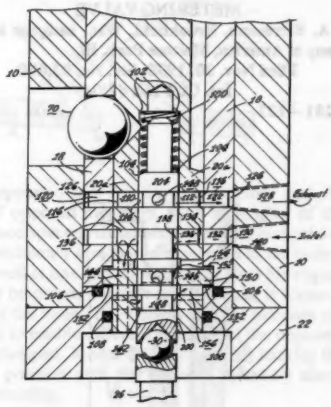


3,675,890

BOOSTER SERVO CONTROLLED VALVE CONTROL MECHANISM

Roy Rosebrook, Sr., Downey, Calif., assignor to Anellux Systems Corporation, El Segundo, Calif.

Filed Feb. 16, 1970, Ser. No. 11,526
Int. Cl. B23q 35/16
U.S. Cl. 251—3 **5 Claims**



A valve control mechanism is provided which is particularly well suited to be used in conjunction with an hydraulically operated machine tool, such as a milling machine, lathe, or similar machine. A tracer mechanism actuates the valve which in turn hydraulically controls the movement of the machine tool. The disclosure is particularly concerned with such a valve control mechanism which incorporates a booster servo system for facilitating the operation of the mechanism and thus lightening the contact pressure of the stylus of the trace. mechanism on the guiding template.

3,675,891

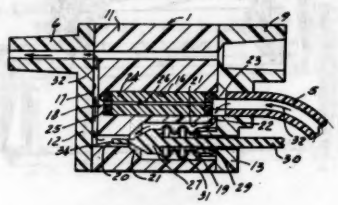
CONTINUOUS CATHETER FLUSHING APPARATUS

Gordon S. Reynolds; Karl A. Pannier, Jr., and James L. Sorenson, all of Salt Lake City, Utah, assignors to Le Voy's, Inc., Salt Lake City, Utah

Filed Sept. 18, 1970, Ser. No. 73,314
Int. Cl. F16k 51/00; A61m 5/00
U.S. Cl. 251—117 **10 Claims**

An apparatus effecting continuous flushing of intravascular catheters in systems for monitoring conditions in the thoracic

cavity during surgery in the intensive care ward, cardio vascular diagnostic laboratories, etc. The apparatus embodies a small block having therein passages for a flushing solution in one of which is a flow resistor to limit the flushing to a small



amount, a fail-safe valve in another passage connected by a bypass to the first passage for fast flushing with a much larger amount of solution, and means for connecting the catheter to a monitoring apparatus.

3,675,892

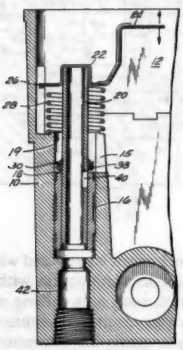
METERING VALVE

William A. Biermann, Brookfield, Wis., assignor to Controls Company of America, Melrose Park, Ill.

Filed Nov. 30, 1970, Ser. No. 93,670

Int. Cl. F16k 47/04

U.S. Cl. 251—121 2 Claims



The tubular metering stem is closely guided in the sleeve pressed into the bushing. The upper end of the guide sleeve serves as the valve seat. The stem is provided with a groove which receives the washer as it is coined in a fixture to flow the washer metal into the groove. The spacing between the washer and the corner of the groove below the washer is inadequate to receive the O-ring in a normal manner. Therefore, the corner bites into the O-ring forcing the O-ring against the washer and the bottom of the groove to insure against leakage between the ring and the stem or the washer. The spacing between the O-ring and the valve seat controls the low flow rate as the stem rises. Above low flow the rate is determined by the stem rise and the characteristics of the metering slot. Full shutoff is insured when the O-ring seats on the valve seat.

3,675,893

COCK WITH SPHERICAL CASING

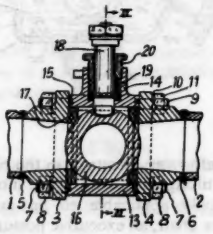
Raymond Andre Avelines, Montreuil-sous-Bois, France, assignor to Crane S.A., Paris, France

Filed Sept. 30, 1968, Ser. No. 763,648

Claims priority, application France, April 4, 1968, 68146935

Int. Cl. F16k 43/00

U.S. Cl. 251—152 3 Claims



A detachable cock casing of substantially spherical configuration is clamped between registering flanges of pipe sections which are provided with sealing means by a plurality of tie-bolts of which some are adapted to slide in elongated holes formed in said flanges to permit the sliding movement of said tie-bolts away from each other, in their slackened condition, and thus permit the passage, by a movement of translation of the detachable casing in a direction at right angles to the axis of the relevant pipe sections.

3,675,894

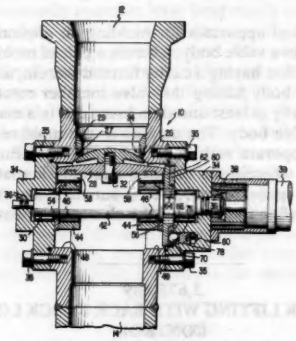
EYELID HYBRID BUTTERFLY TYPE POPPET VALVE

Morley V. Friedell, Wheatridge, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Dec. 3, 1969, Ser. No. 881,779

Int. Cl. F16k 25/00

U.S. Cl. 251—163 3 Claims

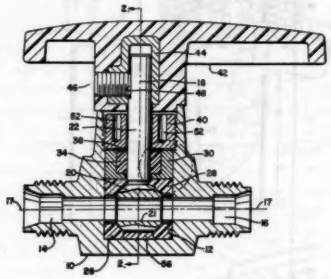


A cylindrical valve body carries a semi-spherical pocket outside of the axial flow path which receives an eyelid, hybrid butterfly type poppet valve of similar configuration and which may be selectively rotated to a position coaxially with an annular valve seat and then axially advanced to valve closed position.

3,675,895
TRUNION MOUNTING FOR ENCAPSULATED BALL VALVE

Stephen Matousek, Moraga, Calif., assignor to Whitey Research Tool Co.

Filed May 28, 1970, Ser. No. 41,381
Int. Cl. F16k 27/06
U.S. Cl. 251—315 4 Claims

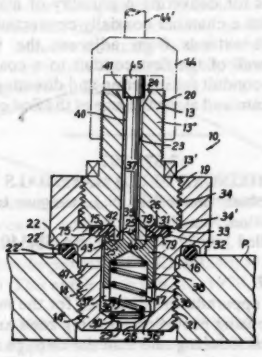


The specification and drawings show a ball valve including a housing defining an internal valve chamber and inlet and outlet flow passages extending through the housing and into the chamber. A ball member having a through flow aperture is positioned centrally in the chamber and an actuating stem extends radially from the ball to a position outside the housing. In the embodiment shown, the chamber is cylindrical and the ball and stem are axially aligned with the axis of the chamber. A resilient packing of synthetic resinous material, such as polytetrafluoroethylene or the like, is disposed in the chamber to surround the ball and sealingly engaging both the ball and the inner walls of the chamber. The packing fills substantially all voids between the ball and the chamber except for ports formed through the packing between the inlet and outlet passages and the ball. Positioned beneath the ball and axially aligned with the stem is a rigid trunion member which extends through the packing between the ball and the end wall of the chamber. The trunion is either integral with the ball and spaced a slight distance from the end wall or, alternately, it is carried by the end wall and spaced a slight distance from the ball.

3,675,896
VALVE INCLUDING RESILIENT SEAT WASHER WITH ABUTTING RIGID ANNULAR WASHER

Jacques H. Mercier, 49 rue de Naples, Paris, France

Filed May 21, 1970, Ser. No. 39,441
Claims priority, application France, May 28, 1969, 6917305
Int. Cl. F16k 1/34
U.S. Cl. 251—321 5 Claims

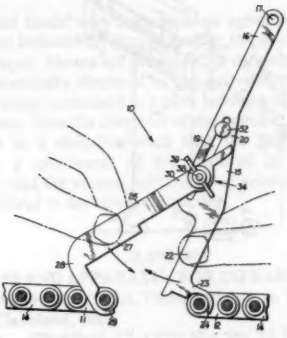


This invention relates to a valve for fluid under pressure which may be a gas or liquid, the valve comprising a fluid passageway having a resilient annular seat encompassing the passageway with the valve member cooperating with said seat to control said passageway, said valve member being urged to closed position against said seat both by the fluid pressure and by associated resilient means and providing a highly effective seal at all pressures, both high and extremely low, the valve member including a stem, the end of which is designed to be pushed to open the valve.

3,675,897
TOOL FOR DRAWING THE ENDS OF OPPOSED MEMBERS TOGETHER

James A. Smith, Eugene, Oreg., assignor to Fibreboard Corporation, San Francisco, Calif.

Filed Aug. 24, 1970, Ser. No. 66,237
Int. Cl. B66f 3/00
U.S. Cl. 254—78 6 Claims

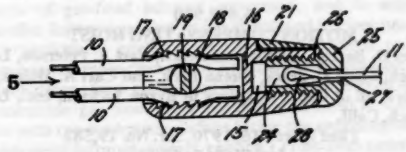


A hand-operated tool for drawing together and clamping the ends of opposed members, such as lengths of chain, in predetermined spaced relationship. The tool comprises a main arm and a secondary arm pivotally secured to the main arm. A hook is formed at one end of each of the arms for engaging the members to be drawn together and a handle is formed at the other end of the main arm. The pivot point between the arms is adjustable to enable different spacings of the opposed members when clamped. Means are provided for locking the arms in a closed position with the opposed members clamped in spaced relationship.

3,675,898
DEVICES FOR DRAWING WIRES THROUGH CONDUITS

Arthur P. Fattor, 5380 S. Holly St., Littleton, Colo., and William Hortenslus, 8278 Cherokee St., Denver, Colo.

Filed Jan. 29, 1970, Ser. No. 6,722
Int. Cl. F16g 11/00
U.S. Cl. 254—134.3 FT 10 Claims



A substantially cylindrical plug-like clamp having a rectangular socket in one extremity, to receive the wires, and a circular socket in the other extremity, to receive a flexible tension element or fishing tape. A lever-actuated, flat shaft transversally crosses the rectangular socket which, when rotated, clamps insulated wires in the latter socket and a screw-actu-

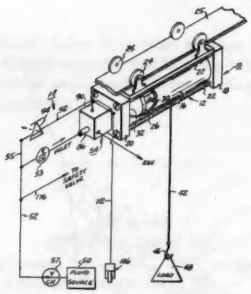
ated nipple in the circular socket acting to secure the extremity of a fishing tape in the latter socket.

3,675,899

HOIST AND BALANCING APPARATUS

Lorne J. McKendrick, 5131 Surfwood Drive, Milford, Mich.

Filed May 27, 1970, Ser. No. 40,863
Int. Cl. B66d 1/00
U.S. Cl. 254—168 **11 Claims**



A pneumatic hoist having a supported cylinder and a piston in the cylinder, and means for introducing compressed air into the chamber to act on the piston to develop a force for lifting or supporting a load. A pneumatic control system is disclosed for controlling the pressure of compressed air admitted into the chamber and is adapted to selectively introduce air having one of three adjustable predetermined pressures chosen to balance either the weight of the load-attachment means, the combined weight of the load-attachment means and the load, or the weight of a load greater than the combination in order to lower, suspend, or raise the load. A safety valve in the system is arranged to trap the air in the cylinder behind the piston in the event of loss of source pressure so that a suspended load cannot accidentally drop. The control system is actuated by a hand control device which has a built-in safety latch mechanism for tamper-proof operation of the hoist apparatus.

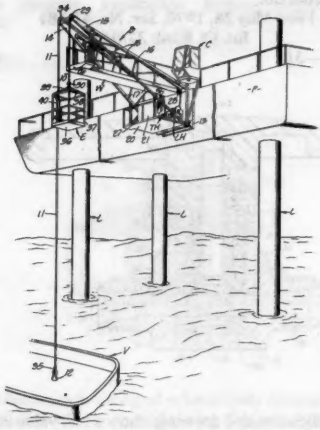
3,675,900

MOTION COMPENSATING HOIST

Charles D. Barron, Huntington Beach; Earl A. Peterson, Long Beach; Gary K. Stark, Buena Park, and Carl A. Wilms, La Habra, all of Calif., assignors to Byron Jackson, Inc., Long Beach, Calif.

Filed March 16, 1970, Ser. No. 19,582
Int. Cl. B65g 67/58
U.S. Cl. 254—172 **17 Claims**

A motion compensating hoist for moving a load between relatively vertically movable points, in which a cable from a tensioning hoist is interconnected between the two points, and the cable from a load hoist is connected to the load, and the tensioning hoist and the load hoist are cooperable to establish movement of the load corresponding to the relative movement



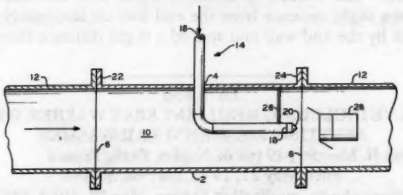
between the two points and to cause further movement of the load between the two points.

3,675,901

METHOD AND APPARATUS FOR MIXING MATERIALS

Pat F. Rion, Borger, Tex., assignor to Phillips Petroleum Company

Filed Dec. 9, 1970, Ser. No. 96,493
Int. Cl. B01f 5/04
U.S. Cl. 259—4 **7 Claims**



An apparatus for delivering a plurality of materials has a first conduit with a chamber coaxially connected to a line. A second conduit extends from adjacent the first conduit through a sidewall of the first conduit to a coaxial location within the first conduit for injecting and directing at least one other material into and along the axis of the first conduit.

3,675,902

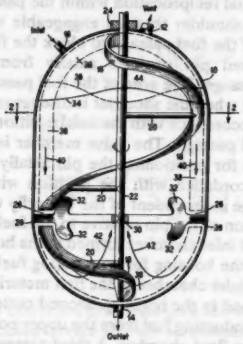
MIXING OF FLUID MATERIALS

Walter R. Marshall, Bloomfield, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 27, 1970, Ser. No. 58,340
Int. Cl. B01f 7/16
U.S. Cl. 259—7 **9 Claims**

Method and apparatus are disclosed for the mixing of fluid materials comprising providing a mixing zone having an inlet and an outlet; introducing said material through said inlet into said mixing zone; agitating said material in said mixing zone

with a rotating, interrupted spiral ribbon agitator; disrupting the material flow in a region of interruption of said agitator to



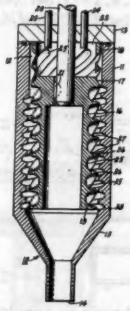
effect more intimate mixing; and withdrawing intimately mixed material through said outlet.

3,675,903

MIXING DEVICE

Robert C. Harper, Loveland, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 15, 1970, Ser. No. 98,277
Int. Cl. B01f 7/24
U.S. Cl. 259—8 **12 Claims**



A mixing device for intermixing liquids to a homogenous state. The device comprises a cylindrical housing and a generally cylindrical impeller rotatably positioned within the housing and includes a mixing section between the housing and impeller and means for recycling a portion of the mixture to the mixing section. They recycling of a portion of the flow provides improved homogenity of the final mixture.

3,675,904

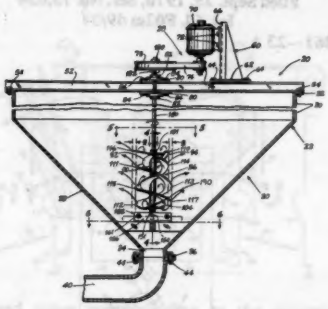
AGITATOR APPARATUS

James S. Bremmer, Box 1, Monroe, Mo., and Bernard F. Koste, deceased, late of 723 Selma Ave., Webster Groves, Mo. (by Elsie E. Koste, executrix)

Continuation-in-part of Ser. No. 812,565, March 25, 1969, abandoned. This application Oct. 28, 1970, Ser. No. 84,855
Int. Cl. B01f 7/24
U.S. Cl. 259—108 **20 Claims**

The agitator apparatus of this invention is designed primarily for use in mixing suspension liquids, such as suspension fertilizers and feeds, and comprises an agitator having a shaft with a first helicoid layer surrounding the shaft, and a second helicoid layer. Means are provided for rotatably mounting the agitator vertically disposed in the material to be mixed, the material being contained in a tank having a diameter substantially greater than the diameter of the agitator, and for rotating the shaft in a direction such that the first helicoid layer produces a movement of the material in the downward direction, and the second helicoid layer produces a movement of the material in the upward direction.

unsymmetrical helicoid layer, pitched greater than and opposite to the first, mounted around the periphery of the first

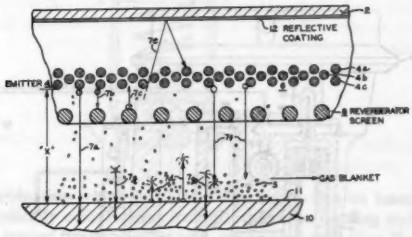


3,675,905

METHOD AND APPARATUS FOR INFRARED HEATING

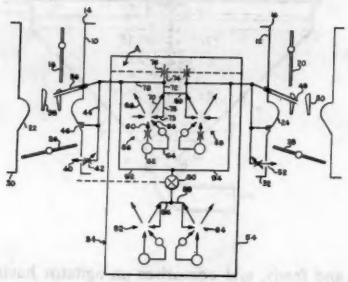
Eugene W. Placek, Parma, Ohio, assignor to Van Dorn Company, Cleveland, Ohio

Filed Sept. 17, 1970, Ser. No. 73,165
Int. Cl. F27b 17/00
U.S. Cl. 263—2 **40 Claims**



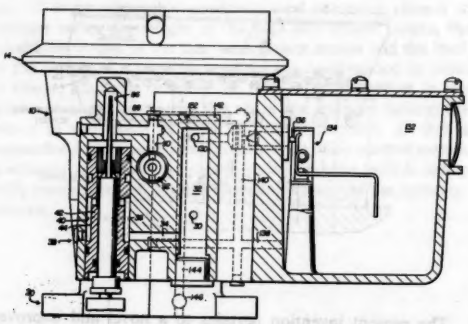
The present invention pertains to a novel and improved method of rapidly heating metals and other materials by means of gas-fired infrared generators, and to apparatus therefor. Infrared generators are positioned in close proximity to a workpiece, preferably so that the infrared radiation source is not more than about five inches nor less than about ¾ inch distant from the surface of the workpiece to be heated. Combustion gas from the generator is directed in turbulent flow onto the workpiece surface facing the generator so as to supplement infrared radiant heating (1) by convection/conduction heat transfer to the workpiece and (2) by secondary radiation from the combustion gas. By use of the method and apparatus of the invention, heating of workpieces is obtained with efficiency and speed far in excess of that possible with prior heating methods.

3,675,906
FLUIDIC FUEL SYSTEM
Walton B. Baldwin, and Donald A. Burger, both of Elmira, N.Y., assignors to The Bendix Corporation
Filed Sept. 25, 1970, Ser. No. 75,634
Int. Cl. F02m 69/04
U.S. Cl. 261—23 A 10 Claims



Fluidic amplifiers responsive to vacuum air signals developed in an engine intake manifold to control fuel delivery to the engine. Fluidic elements are immersed in a fuel containing reservoir with air vacuum control signals applied at a downstream location through an output leg of the fluidic elements and an atmospheric air bleed is provided in the output leg in a horizontal plane above the fluidic elements and reservoir.

3,675,907
CARBURETOR
Harold E. Phelps, Plymouth, Mich., assignor to Harold Phelps, Inc., Plymouth, Mich.
Continuation-in-part of Ser. No. 636,356, May 5, 1967, abandoned. This application May 16, 1968, Ser. No. 729,611
Int. Cl. F02m 1/04, 3/00, 7/22
U.S. Cl. 261—39 1 Claim

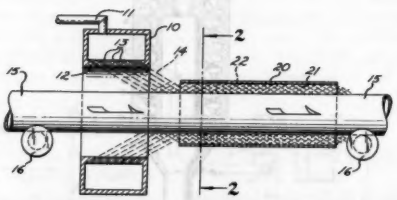


A carburetor for internal combustion engines. Precise regulation of combustion fuel is achieved by means of a high precision metering valve coupled to and operable with the conventional butterfly valve in a manner such that the amount of raw fuel is accurately regulated in accordance with the demand. The metering valve further incorporates a cold start enrichment mechanism and a second metering valve is provided to compensate for abnormal load demands and to prevent overcharging of the engine. The carburetor includes a housing having a throat and a throttle controlled butterfly valve in the throat at the outlet thereof. A fuel nozzle introduces fuel into the throat. An inlet on the housing for receiving fuel from a fuel supply and a first metering valve in the housing for controlling the flow of fuel from the fuel inlet to the nozzle. The first valve comprising a valve seat member having a bore therethrough defining a fuel passage. A valve member mounted for axial reciprocation within the passage. The valve member has a shoulder thereon engageable with the seat at the inlet end of the fuel passage to block the fuel passage. An elongate tapered pin projects axially from the shoulder through the passage. The area of the fuel passage available to the flow of fuel when the shoulder is disengaged from the seat is variable in accordance with the axial position of the pin relative to the fuel passage. The valve member is coupled to the butterfly valve for positioning the pin axially within the fuel passage in accordance with the position with the butterfly valve. A linkage independent of the butterfly valve establishes the axial position of the pin relative to the fuel passage. A vertically elongate inlet chamber formed in the housing. First outlet passage in the housing for conducting fuel from the lower portion of the inlet chamber to the first metering valve. A float chamber defined in the housing. Second outlet passage in the housing for conducting fuel from the upper portion of the inlet chamber to the float chamber. A third passage in the housing for conducting fuel from the lower portion of the float chamber to the throat at a location at the outlet side of the butterfly valve.

ERRATUM

For Class 263—2 see:
Patent No. 3,675,905

3,675,908
QUENCHING DEVICE
Clifford L. Amend, Youngstown, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio
Filed Jan. 4, 1971, Ser. No. 103,578
Int. Cl. C21d 1/62
U.S. Cl. 266—6 S 3 Claims

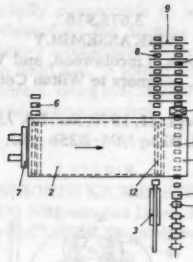


There is disclosed herein an annular quench ring surrounding a coaxial, axially relatively moving pipe for spraying a cone-shaped pattern of quenching fluid inwardly thereagainst. A sleeve, also coaxial with the pipe, is disposed adjacent to the exit end of the quench ring in the direction of the apex of the cone-shaped spray, the sleeve being spaced radially outwardly of the pipe whereby a substantial portion of the fluid richochets between the load and the inner surface of the sleeve throughout the length of the sleeve to increase the quenching effect.

3,675,909
BILLET FEED SYSTEM FOR ROLLING MILLS
Klaus Neumann, Am Klosterhang, Germany, assignor to Moeller & Neumann GmbH, Ingbert/Saar, Germany
Filed June 2, 1970, Ser. No. 42,784
Claims priority, application Germany, June 4, 1969, P 19 28 510.0
Int. Cl. C21d 7/14
U.S. Cl. 266—13 4 Claims

Before the billets to be rolled down in a roll train reach the first roll stand they travel through a de-scaling device behind

which the billets leaving the furnace run out freely. The billets are moved out of the furnace oppositely to the rolling direction and are conveyed crosswise on a rollway disposed in front of the de-scaling device and whose extension toward the first roll stand is located within the furnace chamber.



3,675,910

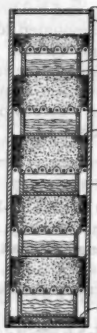
APPARATUS FOR PRODUCING METAL POWDERS

Alan Arias, Cleveland, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Division of Ser. No. 853,855, Aug. 28, 1969, Pat. No. 3,623,861. This application June 25, 1971, Ser. No. 156,778

Int. Cl. F27b *11/08*

U.S. Cl. 266—24 **6 Claims**



Producing metal powders of controlled particle size by reducing oxides with the vapor of a reactive metal in a vacuum.

3,675,911

ARRANGEMENT FOR DISCHARGING PREDETERMINED AMOUNTS OF MOLTEN METAL FROM A VESSEL

Walter Kapun, Wurzbachgasse, Austria, assignor to Wiener Schwachstromwerke Gesellschaft m.b.H., Wien, Austria

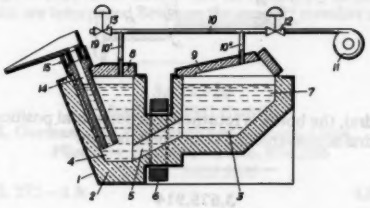
Filed Nov. 7, 1969, Ser. No. 874,817

Claims priority, application Austria, Nov. 11, 1968, A 10928/68

Int. Cl. C21b *7/14*

U.S. Cl. 266—38 **1 Claim**

For discharging predetermined quantities of molten metal a gas tight vessel having a discharge conduit is arranged to hold the molten metal. The vessel is connected to a source of a pressurized gaseous medium so that the gaseous medium assists in the discharge of the molten metal. Sensing means are used to generate an output signal, which is representative of the velocity of flow of the molten metal from the vessel, and the signal is passed to an integrating mechanism attains a predetermined value corresponding to the predetermined quantity of molten metal to be discharged, the discharge flow from the vessel is discontinued.



3,675,912

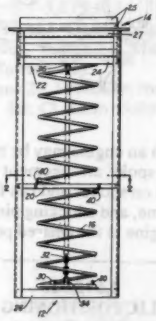
ANTI-SPRING BUCKLING DEVICE

Joseph A. Des Jardins, Norwich, Conn., assignor to AMF Incorporated

Filed July 27, 1970, Ser. No. 58,410

Int. Cl. F16f *1/10*

U.S. Cl. 267—166 **1 Claim**



A combination which includes a housing having an inner wall, a helically coiled spring located within the housing and laterally spaced from the inner wall, apparatus connecting the spring to the housing so that the length of the spring changes in response to a change in loading on the spring, and apparatus which is movably connected to and extends tangentially of the spring for contacting the inner wall of the housing at radially spaced positions on the inner wall to maintain the lateral spacing between the spring and housing. Preferably, the apparatus which contacts the inner wall is a rectangularly-shaped member having four wall contacting portions.

3,675,913

PIVOTABLE MANDREL

Rubin Warsager, 483 Forest St., Kearny, N.J.

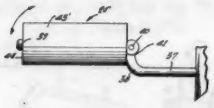
Filed March 27, 1970, Ser. No. 23,190

Int. Cl. B23q *1/04, 3/14*; B25j *1/02*

U.S. Cl. 269—51 **3 Claims**

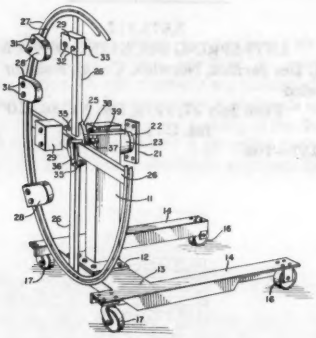
A hinged mandrel which pivots to allow a narrow-necked bottle to be placed thereon. The mandrel pivots to form a

straight-line portion where it is normally curved and the narrow-necked bottle is placed thereon. When the bottle is over



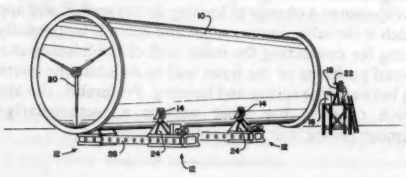
the mandrel, the bottle is returned to a horizontal position and the mandrel is conveniently positioned therein.

3,675,914
ENGINE STAND
Carl E. Douglass, c/o Douglass Products, Huntingdon, Pa.
Filed Oct. 29, 1969, Ser. No. 872,084
Int. Cl. B23q *1/04*
U.S. Cl. 269—55 **4 Claims**



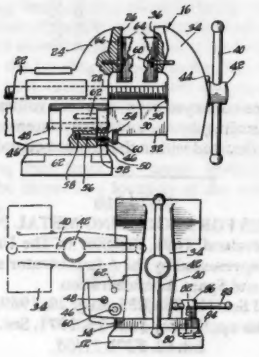
A stand upon which an engine may be mounted and rotated utilizing a wheel and spoke arrangement for turning by hand with movable weights on spokes and rim for counterbalancing the weight of the engine, and a locking pin through the hub assembly to hold the engine in the desired position.

3,675,915
HYDRAULIC POSITIONING SADDLE
Cebron T. Vigus, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 19, 1969, Ser. No. 886,661
Int. Cl. B25j *5/00*
U.S. Cl. 269—58 **10 Claims**



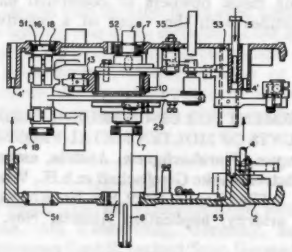
A work supporting and positioning apparatus is provided that includes four positioning saddle-jacks rectangularly disposed in a manner to horizontally mount a large diameter, heavy pressure vessel. The saddle-jacks are operated by linear fluid motors for adjusting their respective positions. Remotely actuated electric controls operate the fluid motors to enable a workman to single-handedly operate the saddle-jacks either singly or in combination to adjust the position of the pressure vessel with respect to a pre-determined point.

3,675,916
VISE ASSEMBLY
Raymond H. Kartasuk, Lincolnwood, and Walter Smierciak, Elgin, both of Ill., assignors to Wilton Corporation, Schiller Park, Ill.
Filed Sept. 21, 1970, Ser. No. 73,860
Int. Cl. B23q *1/06*; B25b *1/02, 1/10*
U.S. Cl. 269—69 **4 Claims**



A vise is disclosed herein and generally comprises an object retaining assembly including confronting fixed and movable jaw members for clamping and holding a workpiece. The object retaining assembly is mounted to a sub-base for pivotal movement between a first vertical position and a second horizontal position. In addition, the sub-base is mounted to a fixed base for pivotal movement about an axis perpendicular to the aforementioned axis whereby partially to rotate the entire object retaining assembly.

3,675,917
SUCTION HEAD IN SHEET-FEED SYSTEMS
Arno Wirz, Schwetzingen, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany
Filed July 24, 1970, Ser. No. 58,037
Claims priority, application Germany, July 26, 1969, P 19 38 041.7
Int. Cl. B65h *3/08*
U.S. Cl. 271—26 **3 Claims**



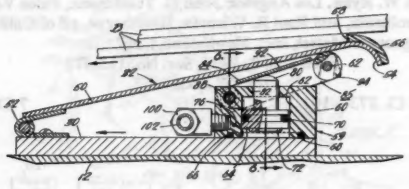
Sheet-feed system for sheet processing machines having a suction head for forming an overlapped sheet-feed which has separating suckers for raising sheets from a pile thereof that is automatically adjustable to a given level, the separating suckers cooperating with feeder suckers proper for transport-

ing the sheets in a direction to further conveying means of the sheet feed system, includes a housing for the suction head formed of two housing halves having respective dividing surfaces, and a plurality of aligning pins, the housing halves being joinable and threadedly connectable to one another at the dividing surfaces thereof by the aligning pins, the housing halves serving to receive substantially all mountings for driven parts of the suction head and, in joined and threadedly connected condition thereof, being machinable to form all opposing bores therein in accurate alignment.

3,675,918
AIR CUSHIONED KICKER FEED BAR

Edward V. Henc, 302 Netherington Drive, Broomall, Pa., and Edmund F. X. Devlin, Manoa, Pa., assignors to said Henc, by said Devlin

Filed Feb. 16, 1970, Ser. No. 11,596
Int. Cl. B65h 5/16
U.S. Cl. 271—44 **11 Claims**

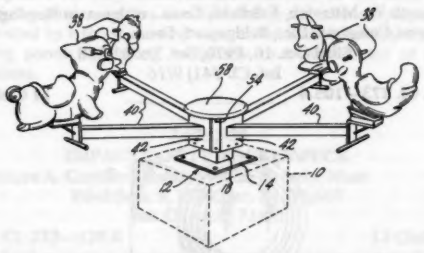


A feed bar assembly for apparatus for performing operations on sheet material including a feed station wherein a plurality of sheets are supported in a stack and means for reciprocating the feed bar to advance single sheets to a pair of feed rolls comprising an elongated bar and a plurality of feed fingers mounted along the length of said bar, each of said fingers including a pivotally mounted plate member and a feed clip mounted on said plate member having a pickup portion adapted to engage an edge of one sheet at the bottom of the stack to advance the same to the feed rolls and actuator means adapted to pivot said feed fingers upwardly to insure positive engagement of each of said feed fingers with the edge of one sheet.

3,675,919
RUBBER SPRING SUPPORTED PLAYGROUND APPARATUS

Ronald L. Ewers, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.

Filed Sept. 21, 1970, Ser. No. 74,050
Int. Cl. A63g 17/00
U.S. Cl. 272—54 **5 Claims**

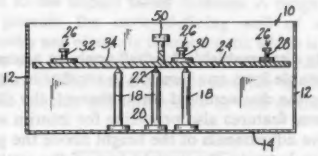


Playground apparatus including at least one occupant-supporting seat wherein the seat is connected to a stationary support member through a resilient elastomer member such that vertical and horizontal movement of the seat is permitted due to the resilient characteristic of the elastomer. In the disclosed form of the invention a plurality of seats are mounted upon elongated arms radially disposed to a support member, and the arms are rigidly connected to an annular collar circumscribing the support member wherein a plurality of elastomer elements are interposed between the support member and collar.

3,675,920
BALANCING GAME

John R. Gorman, 398 W. River Road, Orange, Conn.

Filed Nov. 5, 1969, Ser. No. 874,356
Int. Cl. A63f 3/00
U.S. Cl. 273—1 R **13 Claims**

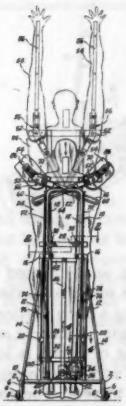


A game played by two or more persons, wherein the object of the game is to place weights on a flat balanced board without tipping over the board. The flat board is preferably balanced on three support members which are positioned within a prescribed area in a container. The container has a bottom and four sides, so that the players are not able to view the positions of the support members.

3,675,921
BASKETBALL TRAINING DEVICE

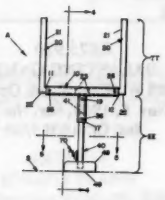
Walter A. Meyers, Sr., Baltimore, Md., assignor to Sports Equipment, Inc., Towson, Md.

Filed June 22, 1970, Ser. No. 48,146
Int. Cl. A63b 69/00
U.S. Cl. 273—1.5 A **11 Claims**



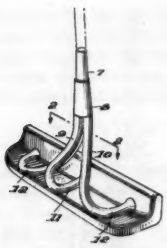
A representation of a basketball player is mounted for up and down movement to simulate jumping. A drive motor causes the representation to jump up and come down once, and a cycle of operation can be initiated at will by a person operating a remote control device or by a player shooting from a given position for a field goal. The representation is vertically adjustable to simulate players of different height and has pivoted arms that swing upwardly as the figure jumps upwardly. Either or both arms can be disconnected from the drive motor. Selectively operable controls permit continuous jumping movement.

3,675,922
PORTABLE GOALPOST
Donald B. Nieland, 127 N. Main St., Carroll, Iowa
Filed Sept. 8, 1970, Ser. No. 70,349
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R **9 Claims**



A readily disassemblable football goalpost assembly that is readily portable from one location to another in either the assembled or the disassembled forms thereof, the disassemblable structural features also providing for interim storage and for selective adjustments of the height above the ground and the distance between the upright legs of the goalpost target member appropriate to the operator's skill. The goalpost structure might also conveniently carry a kicking-tee that is extendable for a measurable distance forwardly from the target member.

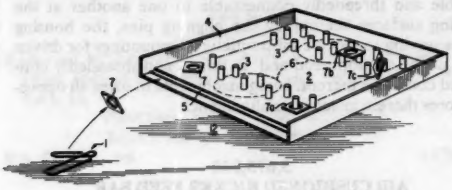
3,675,923
GOLF PUTTER WITH THREE PRONG SHAFT ATTACHMENT
William J. Allen, and Michael D. Barber, both of Brunswick, Ga., assignors to Seaview Enterprises, Inc., Brunswick, Ga.
Filed April 29, 1970, Ser. No. 32,887
Int. Cl. A63b 53/02
U.S. Cl. 273—80.2 **7 Claims**



A golf putter having an elongated head with an upright striking face and with a sole plate extending rearwardly from the striking face forming a body portion which is substantially L-shaped in cross section. A handle supports the head by a plurality of prongs, one of which is located centrally of the length of the head, and additional prongs are located adjacent opposite end portions thereof. The shank of the handle extends in an oblique direction from the point of connection of the center prong with the head.

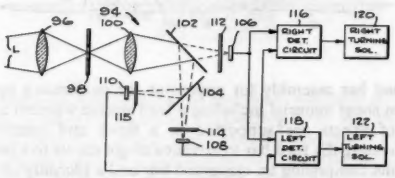
3,675,924
PROJECTION GAME APPARATUS INCLUDING PAPER CLIP PROJECTOR AND CLOSELY SPACED TARGET POSTS
Richard D. Smith, 913 N. Liberty St., Arlington, Va.
Filed April 29, 1970, Ser. No. 32,907
Int. Cl. A63b 71/04
U.S. Cl. 273—101 **6 Claims**

Game apparatus for projecting lightweight planar objects toward a plurality of spaced posts for individually ringing posts, leaning against one or several posts, or being suspended



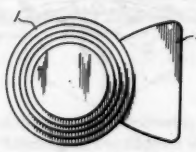
against gravity upon the plateau-like tops of two or more posts.

3,675,925
COLOR RESPONSIVE TOY
John W. Ryan, Los Angeles; John G. Tomkinson, Palos Verdes Peninsula, and Paul R. Wieman, Hawthorne, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 8, 1971, Ser. No. 113,478
Int. Cl. A63f 9/02
U.S. Cl. 273—101.2 **7 Claims**



A toy which senses the color of a target area to select an appropriate output, one of such toys being a rifle which can be aimed at a target device to register whether a hit has been made. The rifle includes a lens which focuses light from the precise direction in which the rifle is aimed onto two identical photocells. A red filter is placed in front of a first of the cells while a neutral density filter is placed in front of a second cell, so that when the rifle is aimed at a red target the red-filtered cell generates a larger output than the other. A detecting circuit determines when the output from the red-filtered cell is greater than that from the other to ring a bell in the gun that indicates a hit. The detecting circuit is activated only at the instant when a child first depresses a trigger on the gun.

3,675,926
SHEET TARGET WITH ATTACHABLE STABILIZING WINGS
Kenneth W. Misevich, Fairfield, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Oct. 16, 1970, Ser. No. 81,258
Int. Cl. F41j 9/16
U.S. Cl. 273—105.4 **11 Claims**



The new form of aerial target which is disclosed consists of a frangible body portion, which may conveniently be a standard

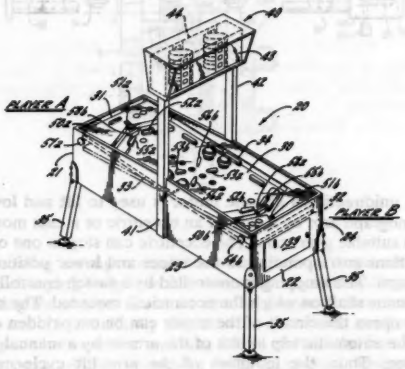
trap and skeet target, to which there has been attached a tail like appendage which controls the flight of the target when it is thrown without spin. The new target is capable of generally following a predictable trajectory with unexpected dives, climbs and even skips which more nearly simulate bird flight than the relatively straight trajectory of the usual clay target.

3,675,927

TWO-PLAYER PINBALL MACHINE

Alvin J. Gottlieb; Wayne E. Neyens, both of Elmhurst; Robert T. Smith, Berwyn, and Roman F. Garbark, Westchester, all of Ill., assignors to D. Gottlieb & Company, Chicago, Ill.

Filed June 10, 1970, Ser. No. 45,134
Int. Cl. A63d 3/02
U.S. Cl. 273—119 A **22 Claims**



A two-player pinball machine intended for simultaneous play by a player at each end and in which the play field has means for tilting first in one direction and then in the other to place the players alternately in offensive and defensive roles, triggered by passage of the ball into the offensive player's out-hole. Scoring targets are provided on the play field with the prime goal being the goal at the opposite out-hole. Sets of flippers, controlled from the respectively opposite ends of the machine, are provided for the offensive player to drive the ball to the scoring targets and for concurrent use by the defensive player to thwart the offensive player, particularly by driving the ball through the out-hole of the latter, to achieve tilting of the play field so as to take over the offensive role. A single ball, which need not leave the surface of the play table, sufficies for both players. A control arrangement is provided for the targets in which a portion of the targets are activated in a commutated sequence and in which the status of commutation is preserved, and the sequence is reversed, incident to reversal of the tilt of the table. A tilting mechanism is used which is disengageable for easy access to the underside of the table for servicing purposes. The accumulated score of each player is indicated by a single set of drums viewable through oppositely facing panels extending bridgingly over the center of the machine.

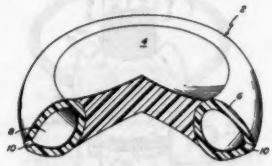
3,675,928

IMPACT SAFETY HOCKEY PUCK

Salvatore A. Gentile, 3 Eaton Avenue, Beverly, Mass.

Filed Sept. 9, 1970, Ser. No. 70,667
Int. Cl. A63b 71/00
U.S. Cl. 273—128 R **13 Claims**

A hockey puck is disclosed for use on any indoor or outdoor hard surface. A collapsible and resilient sidewall structure defining a cavity and air relief means provides the hockey stick contacting portion as well as, impact shock absorbing means to protect other players or spectators. Such structure is joined by top and bottom walls means to provide durable wearing surface for all hard surfaces including ice, as well as, driveways, streets, sidewalks, playgrounds and the like. In addition to the official regulation dimension numerous other sizes, as well as, composite embodiments may be provided with desired sliding, visibility and roll-preventing capabilities,



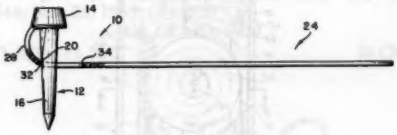
in addition to the impact safety features. A range of plastic materials provide the cavity-defining wall of a selected specific gravity and elasticity characteristic which is lower and softer than the central body portion. Further embodiments employ a hard rubber material body member having a cavity adjacent the contact sidewall means as well as the air relief means.

3,675,929

GOLF TEE

Michael J. Guarino, Sr., Mountainside, N.J., assignor to Thomas La Marca, Jr., a part interest

Filed March 22, 1971, Ser. No. 126,579
Int. Cl. A63b 69/36
U.S. Cl. 273—183 A **14 Claims**



A golf tee is provided with a streamer to facilitate locating the tee and to point out the desired line of flight of the ball. The tee engaging end of the streamer may be integrally secured to the tee or detachably secured thereto. In either case, a slot is provided in the streamer adjacent the tee engaging end thereof. The streamer is adapted to be folded under the tee in a manner such that the tee stem passes through the slot with the forward end of the slot adjacent or engaging the front surface of the tee stem.

3,675,930

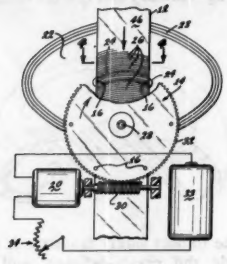
STRIP RECORD FOR A PHONOGRAPH

William F. Summerfield, Huntington Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 2, 1970, Ser. No. 68,876
Int. Cl. G11b 3/00
U.S. Cl. 274—11 R **6 Claims**

A toy phonograph with an elongated strip record having numerous slightly curved grooves extending across its width, and a head having several styluses arranged in a circle, the head rotating so that the styluses engage successive grooves to play

them and to slowly advance the record along its length. An acoustical speaker cone contacts a side of the strip record opposite the styluses, so that vibrations of the tape directly drive the speaker cone.

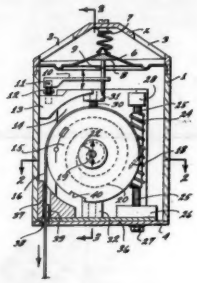


3,675,931

SOUND REPRODUCING APPARATUS

Edmund Schlossar, Berlin, Germany, assignor to Mattel Inc., Hawthorne, Calif.

Filed May 17, 1968, Ser. No. 730,034
Int. Cl. G11b *25/06*
U.S. Cl. 274—11 R **4 Claims**



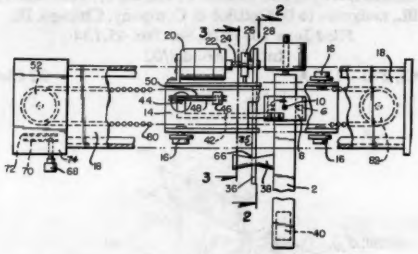
A sound reproducing apparatus, particularly for use in toys, utilizing in the specific embodiment shown a tape adapted for use as a sound track carrier. The tape is, in the housing of the sound reproducing apparatus, stored on a reel around which it is normally wound. The reel is coupled to a rotational velocity regulator and, in addition to its rotary movement in winding and unwinding the tape, the reel is also relatively movable in a translational sense with respect to the regulator so as to move the reel and the tape thereon towards or away from a sound pickup device. In operation the tape is first pulled from the reel, which pulling energizes a spring restraint attached to the reel. When the already pulled tape is released the tape is retracted onto the reel. During such retraction the reel moves against the sound pickup device and the tape is thereby "played," i.e., its sound reproduced, during the retraction of the tape. The operation of the regulator both controls the rotational velocity of the reel and also produces forces which move the reel against the sound pickup device. When the retraction cycle is completed the reel returns to its normal position in which the tape is disengaged from the sound pickup device.

3,675,932

ELECTRICAL LOWERING AND LIFTING MECHANISM FOR PHONOGRAPH TONE ARMS

Jacob Rabinow, Bethesda, Md., assignor to Max L. Libman, Reston, Va., a part interest

Filed March 16, 1970, Ser. No. 19,639
Int. Cl. G11b *3/10*
U.S. Cl. 274—23 A **7 Claims**



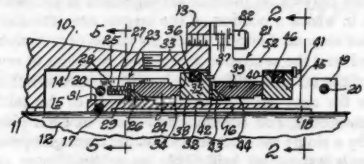
A unidirectional electric motor is used to lift and lower a phonograph arm by means of an eccentric or a cam mounted on a suitable gear train. The eccentric can stop in one of two positions corresponding to the upper and lower positions of the arm. This stopping is controlled by a switch controlled by the same shaft on which the eccentric is mounted. The switch that opens the circuit of the motor can be over-ridden either by the automatic trip switch of the arm or by a manual push-button. Thus, the initiation of the arm lift cycle can be achieved either automatically or manually while the lowering cycle can be initiated manually.

3,675,933

SEAL WITH INSTALLED SPACE PARTS

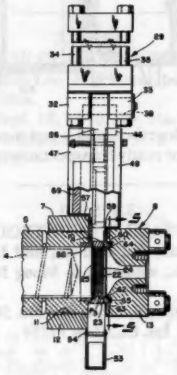
William D. Nappe, Broomall, Pa., assignor to Crane Packing Company, Morton Grove, Ill.

Filed Sept. 3, 1970, Ser. No. 69,352
Int. Cl. F16k *15/16*
U.S. Cl. 277—9 **4 Claims**



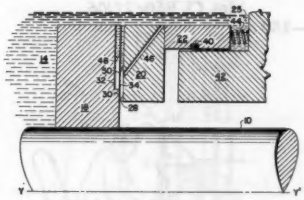
To avoid the necessity of disassembling a drive for a pump to replace worn or defective parts of an end face shaft seal, provision is made for assembling around the shaft replacement parts for the seal at the time the original installation of the shaft seal is made. The subsequently worn or defective parts of the seal are destroyed and removed and the stored replacement parts are moved axially into place in he seal. The gland plate is split and removable to allow the replacement parts to pass through the gland plate to the seal. Worn parts which cannot be destroyed are moved to an annular storage space in housing provided for this purpose.

3,675,934
SCREEN CHANGER MOUNTING
Eugene E. Heston, 548 Parkside Drive, Akron, Ohio
Filed June 1, 1970, Ser. No. 41,800
Int. Cl. B29f 3/01; B76d 1/00; F16j 9/00
U.S. Cl. 277—12 2 Claims



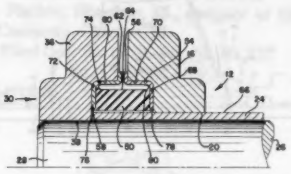
A sealing arrangement between a screen changer strainer and a clamping body in which an annular rib on a sealing plate abutting the strainer fits in an annular groove in the clamping body and a hydraulically displaceable material is confined in the space between the end face of the rib and the bottom of the groove. As the clamping body is pressed against the strainer and undergoes distortion creating areas of high and low pressure around the rim, the material in the groove is displaceable circumferentially of the groove to distribute the forces evenly around the face of the rib abutting the strainer and thereby provide a tight seal and an even distribution of forces on the strainer.

3,675,935
SPIRAL GROOVE SEAL
Lawrence P. Ludwig, Fairview Park, and Thomas N. Strom, North Olmsted, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Continuation-in-part of Ser. No. 723,465, April 23, 1968, abandoned. This application July 13, 1970, Ser. No. 54,540
Int. Cl. F16j 15/34
U.S. Cl. 277—27 6 Claims



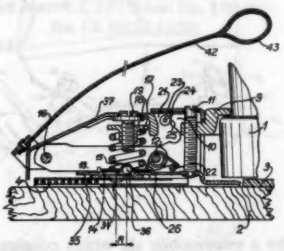
Mating flat surfaces inhibit leakage of a fluid around a stationary shaft. A spiral groove pattern produces a pumping action toward the fluid when the shaft rotates which prevents leakage while a generated hydraulic lifting forces separates the mating surfaces to minimize wear.

3,675,936
TRACK PIN SEAL
Seymour A. Hatch, Maywood, Ill., assignor to Chicago Rawhide Manufacturing Company, Chicago, Ill.
Division of Ser. No. 713,077, March 14, 1968, Pat. No. 3,574,419. This application Feb. 19, 1970, Ser. No. 12,803
Int. Cl. F16j 15/16
U.S. Cl. 277—94 9 Claims



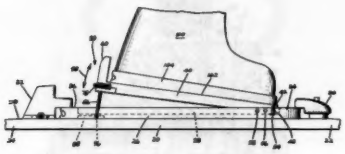
A protective seal unit for retaining grease in, and excluding abrasive particles from a track pin connecting two or more links, which, when connected together, form an endless crawler track for a track laying vehicle. The seal includes first and second collar members, each having radially and axially extending flanges and an elastromeric torsional deflection sealing element extending between the two radially extending flanges, connecting the two collars, and being spaced apart from the axially extending portions of the collars. Each collar is held in fixed relation relative to the link member with which it is associated, and the links are oscillated in relation to each other when the track moves over a drive sprocket or an idler.

3,675,937
SAFETY BINDINGS FOR SKIS
Nicolar Laszlo, Cluses, France, assignor to Ets. Carpano & Pons, Cluses, France
Filed July 21, 1970, Ser. No. 56,960
Claims priority, application France, July 25, 1969, 6925544; Nov. 25, 1969, 6940539
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 10 Claims



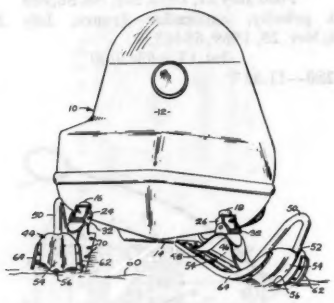
A heel clip for releasably attaching a heel of a ski boot to a ski includes a framework pivotally mounted on the ski. A first member is pivotally connected to the framework for movement between first and second positions. In the first position, a second member pivotally connected to the first member engages a stop member and a clamp connected to the second member firmly engages the heel of a ski boot. When the heel exerts a sudden force sufficient to overcome a spring biasing the first member in the first position, the first member moves to the second position whereupon a groove in the second member receives therein the stop member thereby permitting the second member to pivot relative to the first member. This pivotal movement causes the clamp to release the heel of the ski boot.

3,675,938
SKI WITH INCLINED BOOT PLATFORM
Jon D. Sigl, P.O. Box 22, Fort Wayne, Ind.
Filed July 22, 1970, Ser. No. 57,109
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 C 9 Claims



A snow ski having an upwardly and rearwardly inclined boot mounting platform. The platform is preferably mounted on the ski for selective adjustment of its angle of inclination thereby providing varying degrees of forward lean for the skier, and also for selective longitudinal adjustment of its position along the length of the ski.

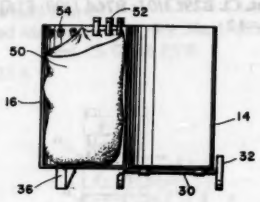
3,675,939
SNOWMOBILE SKI AND BLADE CONSTRUCTION
Alban M. Vik, New Brighton, Minn., assignor to Dempco, Inc., Minneapolis, Minn.
Filed March 2, 1970, Ser. No. 15,603
Int. Cl. B62m 27/02
U.S. Cl. 280—28 3 Claims



A blade for a snowmobile ski which consists of a narrow vertically disposed blade body adapted to be mounted on the longitudinal edge of a snowmobile ski in a position to depend downwardly. The forward portion of the blade curves upwardly to conform to the front of the ski. The blade is preferably provided with an integral horizontal web that is bolted or welded to the edge of the ski and lies in a abutting face to face relationship with the ski.

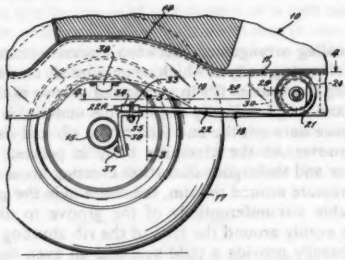
3,675,940
MOBILE TRASH CART
James R. Crookston, 3566 Oak Road, Stow, Ohio
Filed April 30, 1970, Ser. No. 33,257
Int. Cl. B62b 1/16
U.S. Cl. 280—47.26 2 Claims

A mobile trash cart is provided including a two-part container having each part extending the height of the container, hinge means secure the parts together for pivotal movement therebetween, lock means on opposite edges of the container



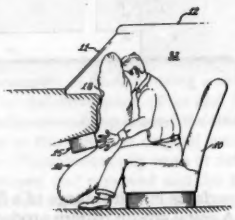
to secure such parts together, and a cart means engages one of the container parts for ready transportation of the container.

3,675,941
VEHICLE STABILITY CONTROL DEVICE
William A. Scheublein, Jr., Ballwin, and Louis P. Fister, St. Louis, both of Mo., assignors to Moog Industries, Inc., St. Louis, Mo.
Filed June 29, 1970, Ser. No. 50,518
Int. Cl. B60g 11/14
U.S. Cl. 280—124 R 7 Claims



A resilient control device for stabilizing the road and load response of a vehicle as well as being useful as the main suspension means for certain vehicles. The device has the characteristics of resisting movement in opposite directions from an initial relationship of the sprung and unsprung components of a vehicle, as well as imposing a desired rate of load carrying capacity.

3,675,942
COLLISION SURVIVAL SYSTEM
John F. Huber, Litchfield Park, Ariz., assignor to Unidynamics/Phoenix, Inc.
Filed Aug. 31, 1970, Ser. No. 68,353
Int. Cl. B60r 21/06
U.S. Cl. 280—150 AB 2 Claims



A restraining device is described incorporating an inflatable bag positioned in a vehicle to restrain persons in a vehicle and

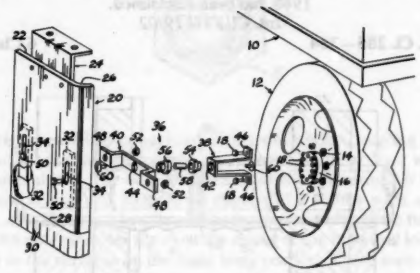
prevent them from colliding with objects when the vehicle is subjected to collision accelerations. The bag incorporates passageways therein which are connected to a gas source; the gas source, when actuated, inflates the passageways, thus extending the bag and drawing air into the bag from the atmosphere within the vehicle. A unidirectional valve permits the air to enter the bag, but prevents its escape in the event the pressure within the bag exceeds that of the atmosphere within the vehicle, such as by the impact of a person with the bag.

3,675,943

SPLASH GUARD FOR TRUCKS

Peter N. Moore, and Leo F. Pierce, both of 117 S.W. 23, Oklahoma City, Okla.

Filed Sept. 18, 1970, Ser. No. 73,525
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 R 2 Claims



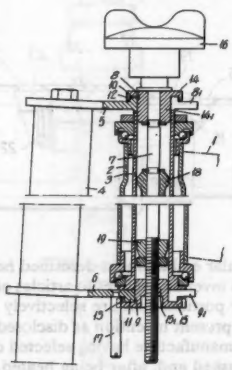
A bracket secured to the lateral side of a truck bed or frame vertically supports a mud flap laterally of the truck wheel position. Bracket means extending between the wheel hub and the mud flap maintains it in parallel spaced relation with respect to the plane of the lateral side of the truck wheel.

3,675,944

APPARATUS FOR ATTACHING A FRONT-WHEEL FORK TO A HEAD PIPE IN A TWO-WHEELED VEHICLE OR THE LIKE

Yozaburo Kobayashi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1969, Ser. No. 885,531
Claims priority, application Japan, Dec. 16, 1968, 43/109803
Int. Cl. B62k *15/00*
U.S. Cl. 280—278 9 Claims



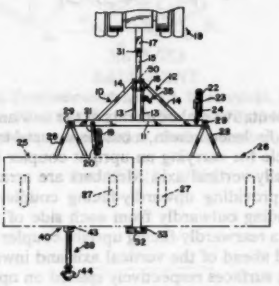
A front-wheel fork of a two-wheel vehicle carries upper and lower bridge members adapted for detachably engaging opposite ends of a core end projecting from a head pipe. The bridge members have central openings with lateral grooves in which the ends of the rod can be introduced and removed, and selectively locked by means of positioning members on the rod which engage in the central openings and interlock with the bridge members.

3,675,945

DUPLEX IMPLEMENT HITCH

Raymond G. Fischer, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 16, 1970, Ser. No. 81,237
Int. Cl. B60d *1/00*
U.S. Cl. 280—411 C 2 Claims



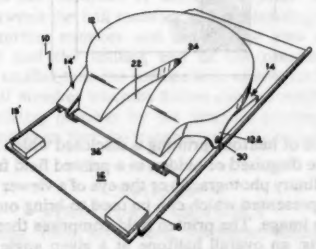
A pair of side by side tractor propelled implement units are connected to a duplex hitch for operation over a broad area and are shiftable to tandem positions with the duplex hitch disposed therebetween for transporting the implement by propelling force of the tractor connected to one of the implement units.

3,675,946

IMPACT FIFTH WHEEL

Miklos B. Korodi, New York, N.Y., and Clarence R. Runyan, Holland, Mich., assignors to Holland Hitch Company, Holland, Mich.

Filed March 2, 1971, Ser. No. 120,089
Int. Cl. B62d *53/00*
U.S. Cl. 280—440 5 Claims



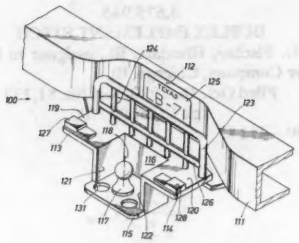
A fifth wheel assembly for trucks wherein the fifth wheel is pivotally supported on a pair of laterally spaced mounts, each having an enclosure with an open bottom and sloping front and rear surfaces, a laminated insert of bonded alternate viscoelastic layers and metal layers in each enclosure, having a stepped construction, with connection means at the bottom of each insert, and connection means at the top of each insert attached to the enclosure.

3,675,947

COUPLER-ALIGNING TRAILER HITCH

Leon Blagg, Flying X Ranch, P.O. Drawer H, Bertram, Tex.

Filed Feb. 16, 1971, Ser. No. 115,374
Int. Cl. B60d *1/06*
U.S. Cl. 280—500 **14 Claims**



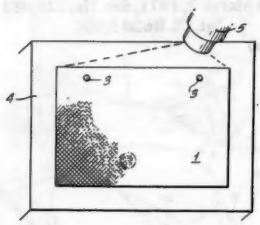
In the representative embodiments of the new and improved trailer hitches disclosed herein, a base is secured to the rear of a towing vehicle for carrying an upright coupler ball aligned along a generally-vertical axis. Members are arranged above the base for providing upwardly-facing coupler-supporting surfaces extending outwardly from each side of the coupler ball as well as a rearwardly-facing upright coupler-positioning surface spaced ahead of the vertical axis and inwardly-facing opposed guide surfaces respectively spaced on opposite sides of the vertical axis for cooperatively guiding a trailer coupler downwardly onto the coupler ball after the coupler has been slid across either of the supporting surfaces.

3,675,948

PRINTING METHOD AND ARTICLE FOR HIDING HALFTONE IMAGES

Ralph C. Wicker, Fairport, N.Y., assignor to American Bank Note Company, New York, N.Y.

Filed Sept. 10, 1969, Ser. No. 856,663
Int. Cl. B41m *3/14*; B42d *15/00*
U.S. Cl. 283—6 **13 Claims**



A method of halftone printing is disclosed which permits an image to be disguised or hidden in a printed field from detection by ordinary photography or the eye of a viewer and an apparatus is presented which can be used to bring out or detect the hidden image. The printed field comprises three halftone components: an overall halftone at a given angle; a second halftone at a different angle and containing a negative of the image; and the image itself in halftone at a third angle and coincident with the negative portion of the second halftone. When each of the halftones is made up of dot figures of similar size, period and tone, the field will give a uniform appearance to the eye, obscuring the image and resisting photographic analysis except by impractical magnification.

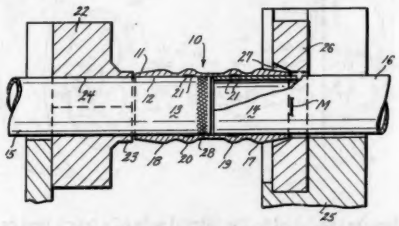
An apparatus in the form of a screen made up of a periodic pattern of similar frequency to that of the halftone screen of the printed field and arranged at the proper angle to the printed field, will reveal the hidden image at a different brightness than the background. By moving the properly arranged screen in an appropriate manner relative to the printed field, the hidden image will appear as a blinking image. If the method and apparatus are used in printing and checking security documents, additional printing techniques are disclosed for preventing counterfeiting of the documents such as black overprinting, slight variations in the print angle from the conventional angles and the use of unique and complicated dot figures and images.

3,675,949

COUPLING FITTING FOR CONNECTING TWO PIPES

James A. Dawson, Hazelwood, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Division of Ser. No. 739,528, June 24, 1968, Pat. No. 3,572,779. This application May 18, 1970, Ser. No. 38,355. The portion of the term of this patent subsequent to March 30, 1988, has been disclaimed.
Int. Cl. F16l *19/02*
U.S. Cl. 285—354 **6 Claims**



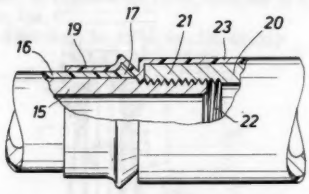
A coupling for fluid conduits in which each end portion of two tubes to be connected is provided with a swaged-on adapter carrying the necessary means to connect or disconnect the tubes without disturbing the swaged-on adapter.

3,675,950

ARTICLES OF MANUFACTURE INCLUDING CYLINDRICAL MEMBERS HAVING SPECIALLY-TERMINATED PROTECTIVE COATINGS

Calvin D. Beene, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 691,522, Dec. 18, 1967, Pat. No. 3,535,136. This application Nov. 21, 1969, Ser. No. 878,722
Int. Cl. F16l *11/12*
U.S. Cl. 285—45 **4 Claims**



The particular embodiment described herein as illustrative of the present invention relates to articles of manufacture having particular portions that are selectively coated. More particularly, the present invention as disclosed herein is directed to articles of manufacture having selected cylindrical surfaces which are masked and, after being heated, are fusion coated by application thereto of pulverulent particles of a fusible thermoplastic or thermosetting coating material. After the article has been coated and the coating has at least firmed, the

mask is removed in such a manner as to leave a well-defined marginal termination of the coating, with this termination being raised in relation to the surface of the adjacent portions of the coating to provide sealing engagement within a pliable complementary sleeve extending from other associated coated articles

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3,675,951

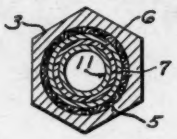
COUPLER FOR REINFORCED HOSE

Louis F. Morin, Springfield, Mass., assignor to Everflex Products, Inc., Ludlow Hampden, Mass.

Filed Jan. 4, 1971, Ser. No. 103,720

Int. Cl. F16l *39/02, 33/22*

U.S. Cl. 285—39 **2 Claims**



This invention is concerned with a device for coupling the end of a hose assembly of the type having an inner liner with an outer shield. The coupler is substantially cylindrical. It has threads at one end adapted to engage to a source such as a tank, etc. There is a hex shaped body portion to facilitate turning. An outer coupler fits over the shield of the hose and locks same to the surfaces on the main body portion. There is on the main body portion a cylindrical member or nipple portion of reduced diameter that fits within the inner liner of the hose. A ring circumscribes the inner liner and locks same about the outer surface of the cylindrical member. The outer coupler is threaded onto the main body portion near the hex surface creating friction pressure sealing engagement of the inner liner between the ring and nipple portion and a clamping engagement of the outer shield of the hose assembly between the ring and coupler.

3,675,952

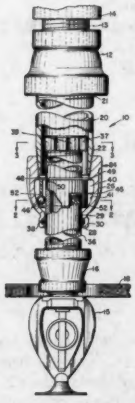
ADJUSTABLE DROP NIPPLE FOR PENDENT SPRINKLER

James W. Mears, Warwick, R.I., assignor to Grinnell Corporation, Providence, R.I.

Filed July 24, 1970, Ser. No. 57,915

Int. Cl. F16l *15/02*

U.S. Cl. 285—302 **21 Claims**



An adjustable drop nipple is disclosed for connecting a pendent sprinkler to a sprinkler system. The nipple includes outer and inner telescoped pipes with a gripping means therebetween which permits an adjustment of the telescoped relation of the pipes for a desired position of the pendent sprinkler below a drop ceiling. The gripping means includes rollers which are positioned in an annular cavity having a downwardly reducing cross-sectional area and which have spiral threads on their outer cylindrical surfaces. When the nipple is installed in its pendent position, the rollers restrain downward movement of the inner pipe, that is a lengthening of the nipple, by a jamming action of the rollers in the reduced cross-sectional area portion of the annular cavity; but the spiral threads on the rollers permit spiral downward movement of the inner pipe for a lengthening of the nipple. The rollers ride upwardly in the cavity to release their grip and thereby permit a shortening of the nipple toward a more telescoped position responsive to an upward force on the inner pipe.

3,675,953

BALL JOINT

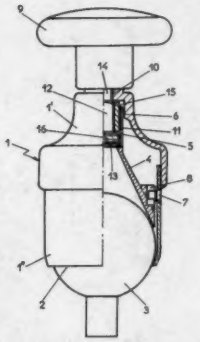
Albert Glatz, Teuchelwiesstrasse 13, Frauenfeld, Switzerland

Filed Oct. 5, 1970, Ser. No. 78,034

Claims priority, application Switzerland, Oct. 6, 1969, 15027/69

Int. Cl. F16c *11/06*

U.S. Cl. 287—12 **10 Claims**



A ball member is turnably accommodated in a socket and a pressure-exerting element is threaded into the socket and can be turned in a sense advancing its leading end towards the surface of the ball member. A deformable insert member is located between the ball member and the leading end of the pressure-exerting member and the surface area of contact between it and the leading end of the pressure-exerting member is smaller than the surface area of contact between it and the ball member whereby forces exerted upon the pressure-transmitting member by the pressure-exerting member are amplified when they are transmitted to the ball member.

3,675,954

STRUCTURAL ASSEMBLY

Gustav Konig, 7026 Bonlanden, Bonlanden Stuttgart, Germany

Filed Jan. 22, 1971, Ser. No. 108,780

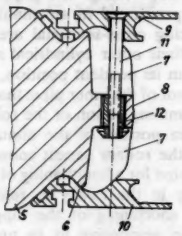
Claims priority, application Germany, Jan. 23, 1970, P 20 03 011.9

Int. Cl. F16b *5/06*

U.S. Cl. 287—20.92 W **14 Claims**

A platelike element comprises at least one undulated edge portion, which is undulated on opposite sides. At least one pair of undulated connecting members are provided, which are complementary to and mate with said undulated edge portion on opposite sides thereof. Threaded fastening means are

connected to said undulated connecting members and to said platelike element adjacent to said undulated edge portion to hold said undulated connecting members mated with said undulated edge portion.

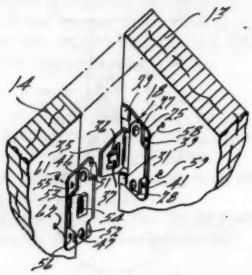


3,675,955

CABINET BRACKET

Frank R. Hajduk, Lincoln Park, Mich., assignor to Regis Manufacturing Company

Filed March 23, 1970, Ser. No. 21,731
Int. Cl. G09f 7/00
U.S. Cl. 287—20.927 5 Claims



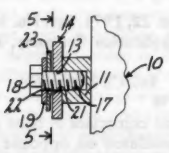
A cabinet assembly of the knockdown type embodying male and female brackets mounted contiguous to peripheral edges of members for affixing the members together in a snap together manner. A method and structure for locating the brackets relative to the respective members in preselected locations is employed. Additionally, the brackets embody improved resilient fingers for holding the brackets and members in an interlocked condition.

3,675,956

CONNECTOR BETWEEN TRANSMISSION ACTUATING SHAFT AND ARM THEREFOR

Dalton A. Thomas, Route One, Box 97, Alpine, Ala.

Filed April 19, 1971, Ser. No. 135,101
Int. Cl. F16d 1/06
U.S. Cl. 287—53 R 3 Claims



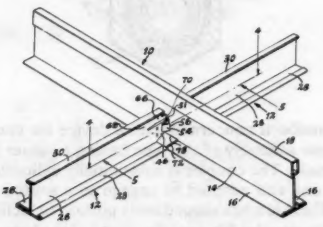
A connector for transmission actuating shaft and an arm having an elongated opening receiving projecting end of shaft with one side of opening tapered inwardly. A washer carrying an inwardly tapered wedge is interposed between the arm and a retainer member with the wedge between and engaging the inwardly tapered side of opening and the projecting end of shaft.

3,675,957

LOCKING CONNECTION FOR SUPPORTING GRID SYSTEMS

Robert Paul Lickliter; Earl Abbott, both of Hamburg, and John F. Reeves, Tonawanda, all of N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 806,977, March 13, 1969, Pat. No. 3,584,904. This application March 10, 1970, Ser. No. 18,071
Int. Cl. E16b 21/08; E04b 1/38
U.S. Cl. 287—189.36 A 9 Claims



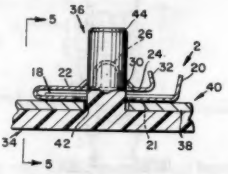
A first support member having a web with a slot therein and a second support member having a web upstanding from a pair of laterally extending support flanges and a locking connector formed integral with the web and extending axially therefrom for insertion in the slot. The connector has a locking tab engageable behind one side of the first support member web. The second support member has an offset end portion forming a continuation of the support flanges and adapted to overlie the first support member support flanges. The offset portion is provided with a transverse edge engageable with the other side of the first support member web to provide a rigid connection between the first and second support members. The offset portion has a thickness less than one-half the thickness of the support flanges with which it is integrally formed.

3,675,958

SHEET METAL PANEL FASTENER

William B. Duffy, Berkeley Heights, N.J., assignor to TRW Inc., Cleveland, Ohio

Filed June 17, 1970, Ser. No. 46,940
Int. Cl. F16b 17/00, 37/02
U.S. Cl. 287—189.36 D 8 Claims



A unitary, spring metal fastener has inner and outer arms connected by a resilient, reversely bent bight. Both of the arms have through openings formed therein. The arms are normally disposed in divergent untensioned relationship to each other. The outer arm includes two sections connected by resilient webs having an inverted U-shaped configuration. The opening in the outer arm is at least partially defined by a pair of stud

gripping tongues struck upwardly from the adjacent ends of the arm sections substantially between the connecting webs. The fastener is particularly adapted for clamping an apertured member to a support having a stud projecting from the surface thereof confronting the member and through the aperture in the member by compressing the arms toward a substantially parallel relationship with each other to bring the openings therein into registering alignment and forcing the arms downwardly over the stud so that the aforementioned tongues grippingly engage the stud and, upon removal of the compressing force, exert an axial pull on the stud thereby tensioning the apertured member against the support. The fastener also includes means which are easily operable to release the tongues from gripping engagement with the stud for removal of the fastener.

3,675,959
DOOR HOLDER

John A. Hansen, Lake Forest, and Robert E. Doerrfeld, Lindenhurst, both of Ill., assignors to A. L. Hansen Mfg. Co., Gurnee, Ill.

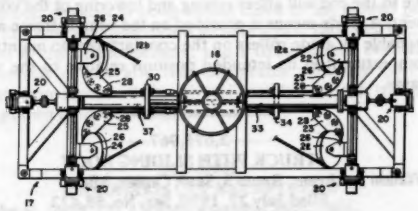
Continuation-in-part of Ser. No. 6,808, Jan. 29, 1970, abandoned. This application June 17, 1970, Ser. No. 46,986
Int. Cl. E05c *19/02*
U.S. Cl. 292—70 6 Claims

A door holder including a receptacle unit adapted to be mounted on a wall and having a plastic body member with an outwardly opening central axial cavity, and a plunger unit adapted to be mounted on a door and having an elongated shank with an outer end releasably interengageable in the cavity of the body member.

3,675,960
SELF LEVELING SPREADER FRAME

Edward J. Mangold, Burlington, Wash., assignor to Skagit Corporation, Sedro-Woolley, Wash.

Filed April 1, 1970, Ser. No. 24,701
Int. Cl. B66c *1/10*
U.S. Cl. 294—81 SF 5 Claims

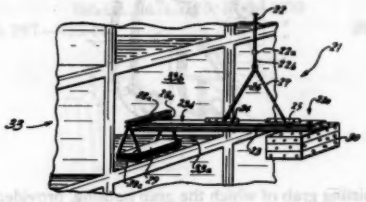


A sling assembly of four cables which are mounted in rectangular array about four pivot sheaves supports a spreader frame for use in fastening to containers or other loads to be hoisted. A set of two of the cables at one longitudinal end of the spreader frame are secured to a piston rod of a first hydraulic cylinder. The set of two remaining cables at the other longitudinal end of the spreader frame are secured to the piston rod of a second hydraulic cylinder. A hydraulic control circuit connects the cylinders with a source of pressurized fluid and interconnects the rod side and rear side of each respective cylinder. The spreader frame is leveled by opening a valve to release fluid from the rear side of the cylinder which has its piston rod secured to the cables supporting the high side of the spreader frame so that the weight of the container will retract the piston rod allowing the container to be leveled.

3,675,961
HORIZONTAL LOAD POSITIONER

Charles B. Wheeler, Box 140, Route 5, Lee's Summit, Mo.

Continuation-in-part of Ser. No. 856,733, Sept. 10, 1969, abandoned. This application June 24, 1970, Ser. No. 49,290
Int. Cl. B66c *1/10*
U.S. Cl. 294—67 R 5 Claims

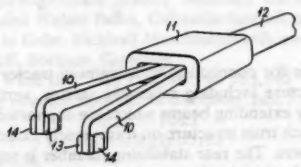


A beam connectable intermediate the ends thereof to a hoist line by spreader cables. One end of the beam adapted for carrying a load and the opposite end of the beam having a plurality of removable counterweights connected thereto for balancing the load to maintain the beam in a horizontal position. In the first form of the invention, the counterweights are fixed with respect to the beam. In the second form of the invention, the counterweights are mounted on a tilt responsive carriage which automatically moves to vary the distance between the counterweights and the fulcrum of the beam to maintain the beam in a horizontal position regardless of the weight of the load.

3,675,962
GRIPPING

David Cumming Simpson, Edinburgh, Scotland, assignor to National Research Development Corporation, London, England

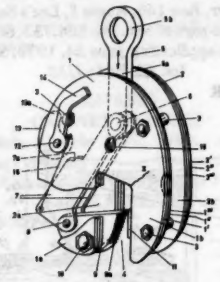
Filed June 4, 1970, Ser. No. 43,539
Claims priority, application Great Britain, June 13, 1969, 30,169/69
Int. Cl. A61f *1/06*
U.S. Cl. 294—99 R 3 Claims



Use of an object-engaging device in the form of a deformable non-stretch container enclosing a sealed volume of fluent granular material is proposed for at least one of a plurality of force applying members in a gripping apparatus. The con-

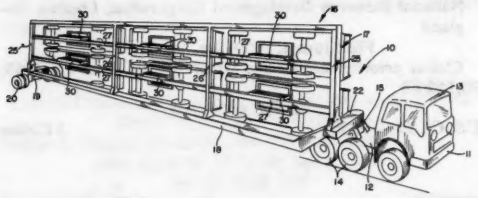
tainer is preferably of a double-walled construction with two flexible walls of which one is elastic, and the inner part is preferably sub-divided. Incorporation of a pressure transducer to indicate applied force conveniently involves the use of electrically conductive granular material to act as a variable resistor.

3,675,963
HOISTING GRAB
Adrianus G. Stijger, Haarlem, Netherlands, assignor to Interlas N.V., Soesterberg, Amersfoortsestraat, Netherlands
Filed Feb. 17, 1971, Ser. No. 116,100
Int. Cl. B66c *1/48*
U.S. Cl. 294—104 **1 Claim**



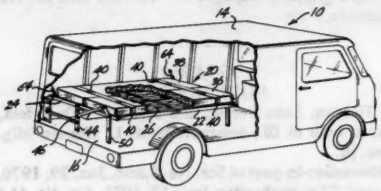
A hoisting grab of which the grab housing, provided with a hoisting eye, comprises at least two spaced webs between which one gripping cam is pivotally mounted, the webs having aligned recesses situated in the path of said gripping cam, adapted to receive an edge portion of an article to be hoisted, wherein the webs are each composed of two or more separate layers of sheet metal.

3,675,964
HIGHWAY TRAILER VEHICLE WITH OFFSET TRUSS STRUCTURE
William L. Pringle, Grosse Pointe Shores, Mich., assignor to Pullman Incorporated, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,833
Int. Cl. B60p *3/06*
U.S. Cl. 296—1 A **3 Claims**



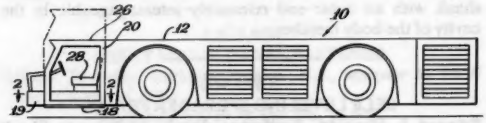
A trailer for connection to a highway tractor comprises a truss structure including relatively narrow, vertical and longitudinally extending beams which are supported on opposite ends of such truss structure on transversely extending stabilizing members. The rear stabilizing member is supported on a suitable wheel and axle assembly and the forward portion of the truss structure is supported on a stabilizing member which includes a downwardly projecting kingpin connected to the fifth wheel of a highway tractor in conventional fashion. The truss structure is the primary structural member extending between the stabilizing members and is offset laterally with respect to the kingpin and longitudinal axis of the tractor to provide an offset space extending the full length of the truss structure within which vehicles or other cargo are suspended by attachment to the beams of the truss structure.

3,675,965
FOLDING BED ASSEMBLY FOR A VEHICLE
Roy Burdett, 3818 E. Fourth Street, Long Beach, Calif.
Filed July 13, 1970, Ser. No. 54,327
Int. Cl. B60p *3/36*
U.S. Cl. 296—23 **3 Claims**



A bed assembly for a vehicle having an upright sidewall. The assembly includes a pair of rectangular frames hinged together along a pair of adjacent side edges. One frame is hinged to the sidewall of the vehicle for swinging between an open horizontal position, and a stored position adjacent the wall. The other frame is swingable between a stored position folded back against the bottom side of the one frame and an open horizontal position. Legs pivotally connected to the frames support them above the floor of the vehicle. Linking arms connected to the legs swing them to positions normal to the frames on swinging of the frames to their horizontal positions.

3,675,966
ELEVATING COMPARTMENT
Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed July 7, 1970, Ser. No. 52,877
Int. Cl. B62d *33/06*
U.S. Cl. 296—28 C **7 Claims**

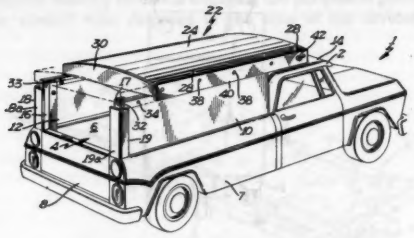


An elevating compartment having a piston rod connected at each end with the vehicle frame. A single acting cylinder reciprocably mounted upon the piston rod and secured to the compartment so that raising and lowering of the cylinder relative to the rod will affect raising and lowering of the compartment. A guide means is provided on the vehicle frame and engageable by guide rollers on the compartment to maintain the compartment in its intended position relative to the vehicle frame.

3,675,967
TRUCK WITH SLIDING ROOF
William J. Ahrens, Route 3, Sauk Center, Minn.
Filed July 27, 1970, Ser. No. 58,432
Int. Cl. B60j *7/02*
U.S. Cl. 296—137 B **2 Claims**

A truck having a cargo carrying compartment behind a cab is provided with a covering roof slidably supported over the

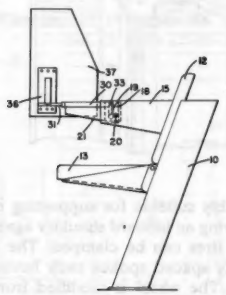
cargo compartment on side panels of such a height as to permit the roof to be shifted forwardly over the cab to expose substantially the entire interior of the cargo compartment. Interlocking, J-shaped guide rails on the roof and cargo compartment side panels prevent vertical or lateral movement of the roof with respect to the side panels.



3,675,968
TABLET ARM ASSEMBLY FOR SEATS

James B. Douglas, 5840 McLynn Avenue, Montreal 29,, Canada

Filed July 10, 1970, Ser. No. 53,897
Claims priority, application Canada, July 11, 1969, 056,775
Int. Cl. A47b *41/00*
U.S. Cl. 297—162 10 Claims



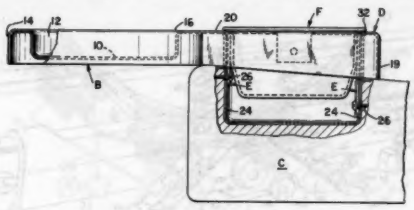
A foldable tablet assembly for the arm rest of a seat of the type including a member pivotally mounted for movement about a first horizontal axis extending transversely of the arm rest, and a tablet member pivotal on said pivotal member about a second axis perpendicular to the said first axis. The present invention provides interengaging means which firstly ensure that the pivotal member is held in a raised position when the tablet is displaced from a vertical plane for movement to a horizontal working position, and secondly the interengaging means maintain the tablet in a vertical plane when the pivotal member is being swung down to the stowed position. The interengaging means include a part, such as a lug, attached to the tablet member, and a fixed surface extending transversely of the arm rest engageable with said part to prevent movement of the pivotal member as the tablet is swung down to the working position.

3,675,969
CHAIR-ARM CUP RECEPTACLE

Charles H. Gage, 1913 Spruce Avenue, Chico, Calif.

Filed Jan. 6, 1971, Ser. No. 104,387
Int. Cl. A47c *7/62*
U.S. Cl. 297—194 17 Claims

A cup receptacle for attachment to the end of the arm of a chair is provided. A cup tray is cantilevered beyond the end of the chair-arm from a mounting on the end of the chair-arm.

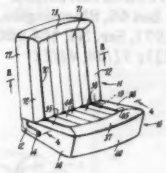


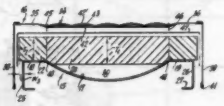
The mounting is in turn secured to the chair by bendable tabs from the mounting arm.

3,675,970
SEAT CONSTRUCTION

Sigmund Bereday, 11 Suchville, Bayamon, P.R.

Filed Feb. 10, 1970, Ser. No. 10,257
Int. Cl. A47c *7/20*; B60n *1/00*
U.S. Cl. 297—452 20 Claims





The invention contemplates a seat comprising rigid structure and yieldable padding beneath a desired upholstery covering. The frame is of stamped sheet material or of plastic laminate and defines an elongated concavity between spaced elongated shoulders. The padding may be molded foamed material, but important economies are realized by using slabbed stock of uniform thickness; different seat and back-support objectives are achieved by selection of slab thickness and/or slab density for each of several slab parts forming the padding of any particular seat element. The upholstery compressionally loads foamed material against the concavity in such manner that a body load on the seat is sustained primarily by the foamed material in its progressive reaction to the centering support afforded by convergent locales of the concavity.

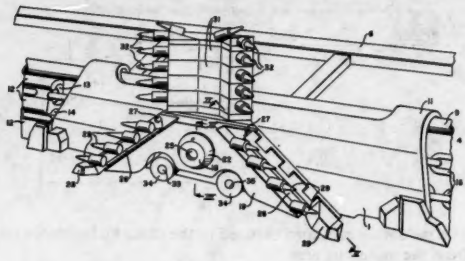
3,675,971
COAL PLOW

Pal Frenyo; Karl-Heinz Hafer; Reimund Karkutt, all of Bochum, and Walter Pelka, Gelsenkirchen, all of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei GmbH, Bochum, Germany

Filed Dec. 31, 1970, Ser. No. 103,142
Claims priority, application Germany, Jan. 9, 1970, P 20 00 748.1
Int. Cl. E21c *35/12*
U.S. Cl. 299—34 10 Claims

A coal plow includes a guide beam that is movable lengthwise along a coal face and that has a mining side and a conveyor side. Projecting horizontally from the mining side of the beam is an axle, on which a supporting member is mounted for rocking movement parallel to the beam. The degree of rocking is limited by means carried by the beam. At

opposite ends of the supporting member there are blade carriers hinged thereto on axes diverging downwardly. Mounted on the lower end of each carrier is a bottom plow blade, while



secured to the same carrier is a plurality of plow blades disposed in an inclined row that extends upwardly from the bottom blade. The blades are in positions to swing with their carrier away from the guide beam.

3,675,972

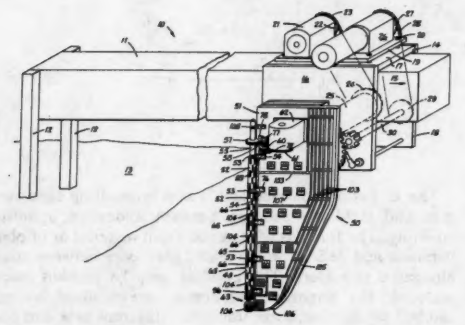
STONE SLOTTING MACHINE

Joseph T. Slomito, R.R. 11, Box 60, Bloomington, Ind.

Filed Jan. 8, 1971, Ser. No. 104,900

Int. Cl. E21c *31/04, 41/12*

U.S. Cl. 299—41 **6 Claims**



A machine for cutting slots into stone. An arbor frame having cutting cylinders rotatably mounted along its edge is pivotally mounted to a carriage movably mounted on a rail. A motor is mounted on the frame and is operable to rotate the cutting cylinders. A second motor and converter mechanism is mounted on the carriage and is operable to reciprocate the arbor with respect to the carriage. Water pipes and suction pipes are mounted to the frame to wash the cutting cylinders and remove the slush formed thereby. Rollers are also mounted to the frame for abutting the sides of the stone slot. One of the cutting cylinders is spring loaded being mountable to the bottom of the arbor.

3,675,973

CONCRETE BREAKER

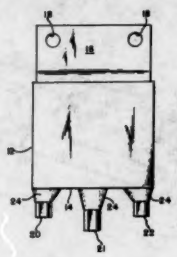
Archie Mottinger, 1901 Marine Drive, Bremerton, Wash.

Filed Aug. 10, 1970, Ser. No. 62,373

Int. Cl. E21c *35/18*

U.S. Cl. 299—88 **5 Claims**

A body having a working end is secured at its opposite end to a coupling for engagement to a mobile hammer or the like. The working end is provided with three spaced, hexagonal breaking bars. Two of the bars are positioned at opposite edges of the working end, whereas the third bar is centrally positioned between them. The central bar extends outwardly



from the other two bars a substantial distance so that it contacts the concrete or the like before the other two bars.

3,675,974

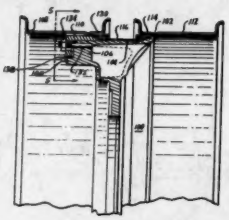
DUAL WHEEL ASSEMBLY AND CLAMP THEREFOR

Nolan B. Durham, Miamisburg, Ohio, assignor to Crowe Manufacturing Company, Dayton, Ohio, a part interest

Filed Jan. 22, 1970, Ser. No. 4,925

Int. Cl. B60b *23/10*

U.S. Cl. 301—13 SM **3 Claims**



A wheel assembly suitable for supporting dual tires comprises a wheel having an inboard shoulder against which a rim assembly for the tires can be clamped. The wheel has outboard peripherally spaced spokes each having a rim clamp fastened thereto. The wheel is modified from conventional wheels by reason of extensions formed on the outboard ends of said spokes. The rim clamp is conventional in that it has a leg portion beveled for wedging against an outboard rim shoulder, but is modified from conventional rim clamps by reason of having a second leg sized to seat upon the aforementioned spoke extensions.

3,675,975

PNEUMATIC DISCHARGE ARRANGEMENT FOR HOPPERS

William D. Mundinger, Highland, and Ronald W. Marsh, Michigan City, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

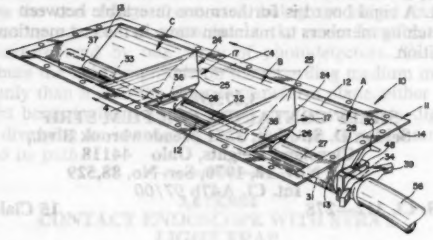
Filed Sept. 30, 1970, Ser. No. 76,931

Int. Cl. B65g *53/40*

U.S. Cl. 302—52 **9 Claims**

An arrangement for discharging materials from a hopper by pneumatic means includes a housing adapted to be attached to the lower end of a hopper. The housing is divided into a plurality of compartments separated by divider wall constructions. A control tube is rotatably positioned within a tubular trough communicating with the compartments. The control tube comprises a material receiving slot rotatable to an open position whereby sequential discharge may be obtained from each of the compartments. The discharge slots are circumferentially spaced about the peripheral surface of the control

tube which may be rotated to a position closing all of the compartments. The control tube is rotatable within bearings provided in each of the divider walls, the said bearings including longitudinally extending recesses which are provided with resilient bearing elements engaging the peripheral portions of the control tube disposed in the area of the divider wall.

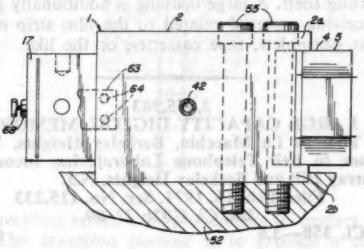


Cleanout slots of relatively narrow width are provided on the tube in longitudinally spaced relation with respect to each other and the discharge slots. Certain of the cleanout slots are also provided at opposite ends of the control tube for cleaning out a space provided between the tubular trough and the peripheral surface of the control tube.

3,675,976
GIBS

Louis F. Carrieri, La Grange Park, and Edwin A. Spanke, Oak Forest, both of Ill., assignors to U. S. Industries, Inc., New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,358
Int. Cl. F16c *17/00*
U.S. Cl. 308—3 **11 Claims**



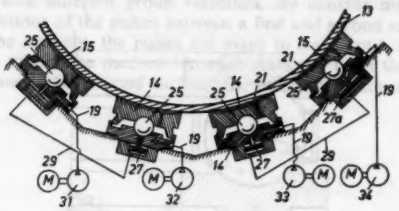
A gib which is internally pressurized by working fluid to a predetermined pressure, and which will yield if the thrust on the gib is sufficient to exceed the internal force afforded by the working fluid.

3,675,977
BEARING FOR SUPPORTING HEAVY ROTATING MACHINERY

Torsten Henry Arsenius, and Carl Goran Albin Hallstedt, both of Goteborg, Sweden, assignors to SKF Industrial Trading and Development Company N.W., Amsterdam, Netherlands

Filed Oct. 2, 1970, Ser. No. 77,436
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **7 Claims**

A hydrostatic bearing for heavy rotating machinery contains a number of bearing blocks, each consisting of a fixed base plate and a top plate which is movable in relation thereto. The bearing blocks cooperate with a race ring in the machinery, and are hydraulically interconnected in one or more groups. One block within each group will serve as reference unit with respect to the clearance between the blocks and race ring, and an automatic adjustment of the clearance will occur

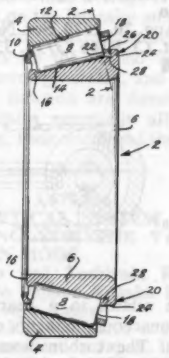


if the race ring due to changes in load and/or temperature will temporarily change its shape and/or its position.

3,675,978
ROLLER BEARINGS

Ralph E. McKelvey, Louisville, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Nov. 12, 1970, Ser. No. 88,951
Int. Cl. F16c *33/66*
U.S. Cl. 308—214 **12 Claims**



A tapered roller bearing has a cone provided with a thrust rib at the large diameter end of the cone raceway. The rib has an abutment face against which the large diameter ends of the rollers in the bearing run so that some of the thrust loads applied to the rollers are transferred to the thrust rib through the abutment face. Either the abutment face or the opposite end faces on the rollers are formed at least in part from a composite material containing a dry lubricant. Should the bearing lose its normal supply of lubricant, the composite material will give up its lubricant and prevent the bearing from failing.

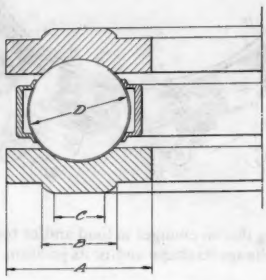
3,675,979
ROLLING BEARINGS COMPRISING ANNULAR WASHERS OR CYLINDRICAL SLEEVES PROVIDED WITH A NUMBER OF BALL GROOVES

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Dec. 3, 1970, Ser. No. 94,804
Claims priority, application Sweden, Dec. 12, 1969, 17,166/69
Int. Cl. F16c *17/00*
U.S. Cl. 308—230 **1 Claim**

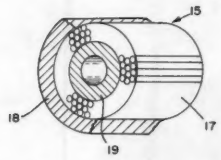
Rolling bearings comprising annular washers or cylindrical sleeves provided with a number of ball grooves,

which washers or sleeves are made of a sheet metal material and with a mainly constant thickness in a section through the center of the axis, characterized thereby that



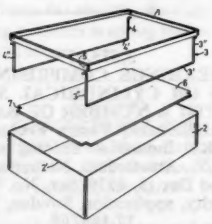
the washer or sleeve has two characteristic zones on the surface opposite the ball groove, both zones being considerably narrower than the total width of the section.

3,675,980
BEARING
Bernard G. E. Stiff, Lynnfield, and Thomas M. Finelli, North Andover, Mass., assignors to Avco Corporation, Cincinnati, Ohio
Filed Aug. 20, 1970, Ser. No. 65,646
Int. Cl. F16c *33/16, 33/26*
U.S. Cl. 308—238 **11 Claims**



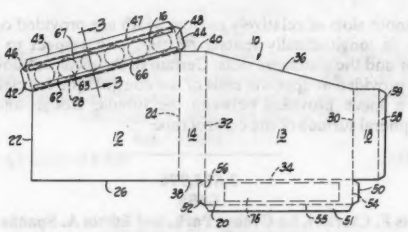
This invention relates to a bearing consisting of a plurality of carbonaceous filaments oriented side by side to form a mass. The carbonaceous filaments are end loaded, that is to say, the terminal cross section surfaces of the filaments form the bearing surface.

3,675,981
COLLAPSIBLE STORAGE UNIT
Filip Birger Emanuel Mallander, Klintvagen 44, Tyreso, Sweden
Filed Jan. 22, 1970, Ser. No. 4,994
Claims priority, application Sweden, June 28, 1969, 1,078/69
Int. Cl. A47b *43/00;* **E04h** *1/12, 1/14*
U.S. Cl. 312—257 **5 Claims**



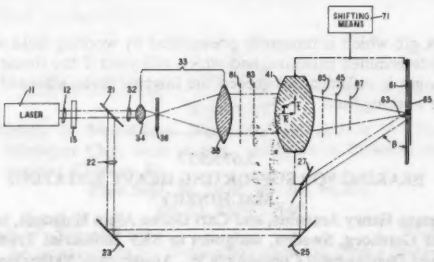
The invention concerns a collapsible storage unit, comprising a rigid frame surrounding the access opening of said unit and a bag of flexible, but substantially non-stretchable material, the edge of which is attached to said frame. At least two U-formed stretching members are so mounted in said frame that they are swingable from a position in plane with said frame into a position mainly perpendicular thereto. In the last mentioned position the stretching members keep said bag in a taut condition in order to form the bottom and side walls of said unit. A rigid board is furthermore insertable between said stretching members to maintain same in the last mentioned position.

3,675,982
SHELF CONTAINER FOR FILM STRIP
Seldon D. Strother, 3251 Meadowbrook Blvd., Cleveland Heights, Ohio 44118
Filed Nov. 12, 1970, Ser. No. 88,529
Int. Cl. A47b *97/00*
U.S. Cl. 312—278 **15 Claims**



A container that holds film strips and related material for shelf storage and display. The container is box-like in construction, book-sized, and supports one or more film strip canisters in apertures along a narrower portion adapted to stand upright and face outwardly from a supporting shelf. A large opening is additionally provided for receiving material related to the film strip or strips, such as pamphlets, tape cassettes, or the like.

3,675,983
LARGE CAPACITY DIGITAL MEMORY
John Thomas La Macchia, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Feb. 16, 1971, Ser. No. 115,233
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**



A method and apparatus are disclosed for forming a page-organized optical memory that can be read by a single array of photodetectors. Each page of the memory is a hologram. To form each hologram, a beam of light is directed through a converging lens and a page of digital data to a portion of a recording medium located at the focal point of the lens. There the converging beam of

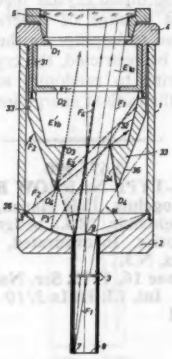
light interferes with a reference beam. An aperture in a mask over the recording medium defines the portion of the recording medium where the hologram is recorded. For each subsequent hologram that is recorded, the converging lens and the mask are first moved an equal amount in the same direction parallel to the surface of the recording medium; and the above-described hologram forming procedure is repeated. As a result of this recording process, the real image from each hologram stored in the memory can be reconstructed at the same location and therefore read by one array of photodetectors. To distribute the light amplitude on the recording medium more evenly than it is in the Fourier transform plane, either the light beam incident on the converging lens is made slightly diverging or converging or a fly's eye lens is inserted into its path.

3,675,984

CONTACT ENDOSCOPE WITH STRAY LIGHT TRAP

Jacques Claude Vulmiere and Huguette Nelly Vulmiere, Paris, France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche (Anvar) Tour Aurore

Filed May 17, 1971, Ser. No. 144,049
Claims priority, application France, May 27, 1970, 7019264
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 R **6 Claims**



The invention refers to improvements to contact endoscopes. The invention purpose is to provide a contact endoscope featuring a cylindrical hollow light collecting member made of transparent material and having smooth internal and frosted external surfaces, a sight (4) fastened at one of the cylindrical collector (1) extremities and a light guide (3) located co-axially to the other extremity of said collector and having a viewing distal face, this endoscope being characterized in that an optical unit (31 to 36) acting as a stray light trap, is located inside the cylindrical collector (1). The invention applies to direct inspection through endoscopes.

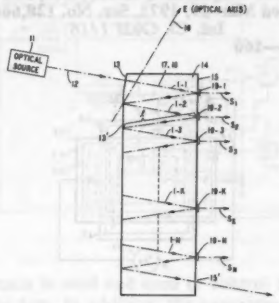
3,675,985

OPTICAL AUTOCORRELATOR FOR AUTOCORRELATING PICOSECOND OPTICAL PULSES

Detlef Christoph Gloge, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Aug. 3, 1970, Ser. No. 60,476
Int. Cl. G02b *27/28*; G02f *1/26*
U.S. Cl. 350—157 **10 Claims**

An optical autocorrelator which can be employed to investigate optical pulses having durations of the order of 10^{-12} seconds is disclosed. The autocorrelator comprises a single birefringent, nonlinear medium. Optical pulses are applied to the medium such that each pulse is resolved into two orthogonally polarized component pulses traveling with different group velocities. By causing multiple reflections of the pulses between a first and second surface of the medium, the pulses are made to trace out a zigzag path within the medium. In each traversal from the first surface to the second surface, the pulses generate second



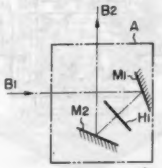
harmonic power whose time average is substantially proportional to a point on the intensity autocorrelation function of the pulses. Second harmonic detectors, located at the reflection points on the second surface, detect the second harmonic power generated, and various points on the autocorrelation function are thereby obtained. The latter function contains essentially all the information about the pulses, e.g., their width and their repetition rate.

3,675,986

REFLECTING OPTICAL SYSTEM CAPABLE OF COMPENSATING FOR THE VARIATION IN POLARIZATION MODE

Tadaaki Yamamoto and Toshiyuki Kasai, Kawasaki, Japan, assignors to Nippon Kogaku K.K., represented by Yutaka Sugi, Tokyo, Japan

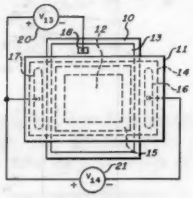
Filed Dec. 23, 1970, Ser. No. 101,072
Claims priority, application Japan, Dec. 29, 1969, 45/105,203; Feb. 6, 1970, 45/10,025
Int. Cl. G02b *27/78*
U.S. Cl. 350—157 **2 Claims**



A reflecting optical system which comprises two reflecting surfaces such as mirrors or the like equal in optical characteristics disposed to have the same plane of incidence. A first half-wavelength plate is disposed in the path of light between the two reflecting surfaces perpendicularly to the path of light and in such a manner that the axis of the first plate forms an angle of 45° with respect to the plane of incidence of the first reflecting surface. And if desired, a second half-wavelength plate is disposed in the path of emergent light from the second reflecting surface perpendicularly to the optic axis of the path of emergent light and in such a manner that the axis of the second plate forms an angle of 45° with respect to the

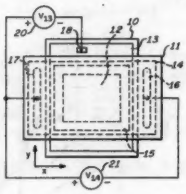
plane of incidence of the second reflecting surface, whereby the light emergent from the optical system is always ensured to present to same mode of polarization as that of the incident light.

3,675,987
LIQUID CRYSTAL COMPOSITIONS AND DEVICES
Mary J. Rafuse, Harvard, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.
Filed Mar. 29, 1971, Ser. No. 128,666
Int. Cl. G02f 1/16
U.S. Cl. 350—160 18 Claims



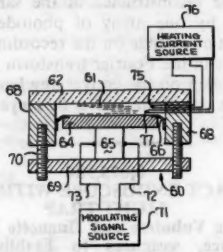
Room temperature nematic liquid crystal compositions suitable for use as scatterers of light in optical devices are presented that include as a basic new component p-methoxyformyloxybenzylidene p-n-butylaniline. Such compositions may also include p-ethoxybenzylidene p-n-butylaniline or p-butoxybenzylidene p-n-butylaniline, along with certain additives including p-toluylidene p-n-butylaniline. The compositions are employed in the form of thin layers within thin cells having transparent electrodes with means for applying electric fields across the layer. The display is formed by electrically controlling light-scattering properties of the liquid crystal layer.

3,675,988
LIQUID CRYSTAL ELECTRO-OPTICAL MEASUREMENT AND DISPLAY DEVICES
Richard A. Soref, Chestnut Hill, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.
Filed Nov. 25, 1969, Ser. No. 879,645
Int. Cl. G01r 5/22; G02f 1/26, 1/28
U.S. Cl. 350—160 22 Claims



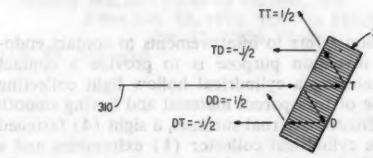
A flat screen electrically controlled, display device is provided that includes a layer of liquid crystalline material of the nematic type. The liquid crystals is one whose optical scattering or translucence is a sensitive function of the electric field in it. The nematic material is placed in a flat-sided cell between a transparent planar front electrode and a back electrode that is transparent or specularly reflecting. A spatial voltage gradient is generated across the transparent front electrode, while the whole of the back electrode may be held at a particular potential. Continuous relative changes of the respective potentials provide continuous or analog movement of the borders between clear and translucent areas formed within the nematic medium.

3,675,989
LIQUID CRYSTAL OPTICAL CELL WITH SELECTED ENERGY SCATTERING
Roy Pietsch, Austin, Tex., and Bernard L. Lewis, Satellite Beach, Fla., assignors to Radiation Incorporated, Melbourne, Fla.
Filed Nov. 26, 1969, Ser. No. 880,129
Int. Cl. G02f 1/36
U.S. Cl. 350—160 R 5 Claims



An optical cell includes a pair of spaced-apart walls, at least one of which is transparent to radiant energy in a wavelength band to be accommodated by the cell and is positioned for incidence of the radiant energy thereon. A liquid crystal medium is interposed between and in contact with the opposing surfaces of the cell walls. The crystalline planes of the liquid crystal medium are normally disposed to permit passage of coherent radiant energy through the medium to impinge on the other wall. When such passage is to be restricted, the crystalline planes are subjected to shearing to randomly scatter and thereby render incoherent the radiant energy incident on the liquid crystal medium.

3,675,990
REFLECTIVE-TYPE NARROW BAND FILTER
Herwig Werner Kogelnik, Fair Haven, and Charles Vernon Shank, Highlands, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed June 16, 1970, Ser. No. 46,729
Int. Cl. H01s 3/10
U.S. Cl. 350—311 2 Claims

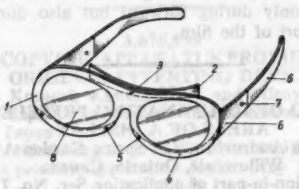


A thick transmission hologram is backed by reflective means to provide a narrow band filter or wavelength selector. Particularly advantageous are holograms with a diffraction efficiency of approximately 50 percent.

3,675,991
SPECTACLES HAVING BANDS THAT REDUCE FACIAL WRINKLES
Gemma Adriana Brenn, Via Can. Ghiringhelli, 6500 Bellinzona, Switzerland
Filed Feb. 20, 1970, Ser. No. 12,993
Claims priority, application Switzerland, Aug. 8, 1969, 12,257/69
Int. Cl. G02c 11/00
U.S. Cl. 351—41 4 Claims

The device comprises in combination a spectacle frame and means for effecting pressure over at least a portion

of the zone of the face which surrounds the eyes. The frame may be elastic and lined by a soft material. The



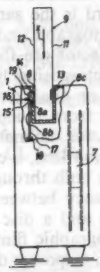
pressuring portions may be removable. The lower edge of the glasses may be shaped to form a portion to support the rings under the eyes.

3,675,992

PROJECTOR FOR USE WITH CASSETTES FOR MOTION PICTURE FILM

Alfred Winkler, Munich, and Herbert Wilsch and Friedrich Winkler, Unterhaching, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 25, 1970, Ser. No. 92,783
Claims priority, application Germany, Dec. 5, 1969, P 19 61 006.3
Int. Cl. G03b *23/00*
U.S. Cl. 352—72 **30 Claims**



The top wall of the housing in a motion picture projector is formed with an inwardly extending chamber for reception of small, medium-sized or large cassettes for convoluted motion picture film. The cassettes are provided with external locating means which facilitate stacking of cassettes during storage or in transport. A plate-like detent member is mounted in the housing adjacent to one side of the chamber and is biased against a cassette in the chamber. The detent member has retaining means which can engage with the locating means of the inserted cassette.

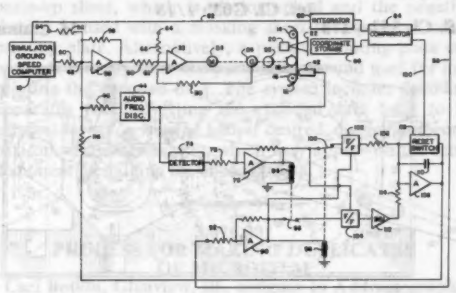
3,675,993

VISUAL SYSTEM

William C. Ebeling, deceased, by Dorothy Stott Ebeling, executrix, 61 Buckboard Road, Wilton, Conn. 06897

Continuation-in-part of applications Ser. No. 757,656, Sept. 5, 1968, and Ser. No. 779,499, Nov. 27, 1968. This application Jan. 18, 1971, Ser. No. 106,952
Int. Cl. G03b *21/50*; G09b *9/08*
U.S. Cl. 352—92 **13 Claims**

A simplified visual system which is inexpensive and provides visual training aids for a general-purpose aviation trainer by using a motion picture projector to project upon a suitable display screen in clear view of the trainee motion pictures of aircraft landings and take-offs. The sound track of the motion picture containing information pertaining to the speed of the camera aircraft when the pic-



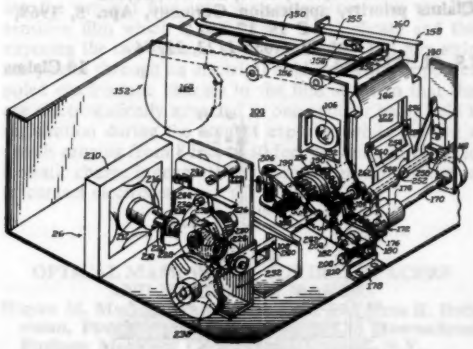
ture was made is read and used to control the projection speed of the film. In addition, the apparatus for initiating the projection of the film at the proper time, for halting the motion picture at the proper time and for rewinding the film is provided.

3,675,994

FILMSTRIP PROJECTOR WITH SYNCHRONIZED SOUND

Frank C. Badalich, Chicago, and Roy H. Watterlohn, Morton Grove, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Dec. 14, 1970, Ser. No. 97,859
Int. Cl. G03b *21/46*
U.S. Cl. 352—163 **5 Claims**



A filmstrip projector provided with synchronized audio accompaniment. The filmstrip is framed with respect to a projection aperture by a manually operable framing means. Once framed, the filmstrip is advanced frame-by-frame by a motor driven film advance mechanism. The audio accompaniment is carried on a dual track audio tape one track of which carries the audio accompaniment. The remaining track carries control signals which serve to actuate the film advance mechanism to maintain synchronization between the audio track and the filmstrip. The framing device includes a clutch for disengaging the film drive mechanism from the drive motor.

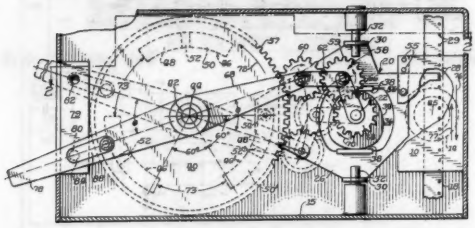
3,675,995
REVERSING MECHANISM FOR MOTION PICTURE PROJECTORS

Jaroslav Chernlavsky, Skokie, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of abandoned application Ser. No. 765,265, Oct. 4, 1968. This application May 21, 1971, Ser. No. 141,346

Int. Cl. G03b 1/18

U.S. Cl. 352—173 15 Claims



A reversing mechanism for an intermittent pull-down motion picture projector changes the phase relationship between the up-and-down and in-and-out cams of the projector by 180° to reverse the direction of movement of the film without stopping the prime mover of the projector. The mechanism achieves the required phase change by shifting the point of contact of the driving gear, that connects the cams in timed operating relationship with the prime mover, along an arc concentric with the axis of the in-and-out cam and through an angle equal to 180° divided by the ratio of the frequency of rotation of the up-and-down cam to the frequency of the in-and-out cam.

3,675,996
FILM TRANSPORTING MECHANISM FOR CINEMATOGRAPHIC APPARATUS

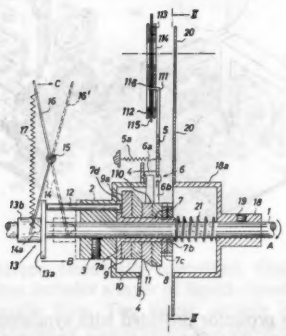
Herbert Wilsch, Unterhaching, and Hermann Muller, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 2, 1970, Ser. No. 25,102

Claims priority, application Germany, Apr. 5, 1969, P 19 17 697.7

Int. Cl. G03b 1/22, 21/44

U.S. Cl. 352—194 10 Claims



A film transporting mechanism for use in a motion picture projector comprises a shaft which rotates the shutter and first and second axially movable advancing cams which respectively impart to the pull-down movements necessary to effect forward and rearward transport of motion picture film. The cams are movable axially of the shaft by a shifter device so that one thereof imparts to the pull-down movement by way of a suitable follower. The face of the second cam differs from the face of the first cam to the extent necessary to compensate for the clearance with which the claw of the pull-down extends into the perforations of motion picture film. This insures that the frames of such film register accurately with the gate and with the optical system not only during forward but also during rearward transport of the film.

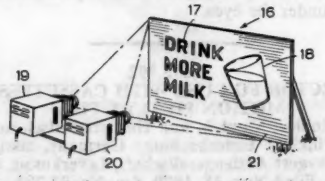
3,675,997
METHOD OF ILLUMINATING PRESELECTED AREAS OF A DISPLAY

Roman Andruchiw, 137 Spring Garden Ave., Willowdale, Ontario, Canada

Continuation-in-part of application Ser. No. 717,663, Apr. 1, 1968. This application Apr. 6, 1970, Ser. No. 25,694

Int. Cl. G03b 21/00

U.S. Cl. 353—28 2 Claims



Preselected areas of a billboard are illuminated by means of a transparency produced by photographing the billboard from a fixed station, producing from the negative a transparency which is opaque except for clear areas which correspond to the preselected areas on the billboard. The transparency is inserted into a projector and positioned at the fixed station. The lens used to focus the image onto the billboard is the same as the camera lens used to obtain the photograph and the aperture settings of the camera and projector are the same. The billboard may be animated by interposing light interfering means such as an interrupter or analyzer in the light path between the light source from the projector and the billboard. The apparatus for animating the billboard includes a bulb, a projection lens, a condensing lens system to direct light from the bulb through the projection lens, a guide for a transparency between the condensing lens and the projection lens and a disc mounted for rotation in the light path. Photographic film may be inserted into the guide and the film exposed through the projection lens. A shutter arrangement is provided to control the exposure time. A peep hole is provided for viewing the interior of the apparatus from the outside in order to properly focus the image from the billboard on the film.

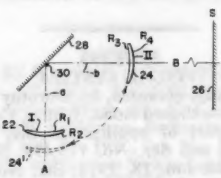
3,675,998
DUAL MAGNIFICATION PROJECTION LENS

Henry T. Wilton, Buffalo, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 29, 1970, Ser. No. 85,104

Int. Cl. G02b 15/00, 27/18

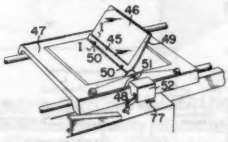
U.S. Cl. 353—101 4 Claims



A two-element projection lens in which one element is swingably mounted on an axis perpendicular to the optical path. When the two lens elements are positioned adjacent each other, they comprise a lens having a given

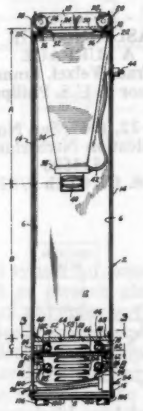
focal length to effect a certain magnification. When the two lens elements are separated by swinging one to an alternate position in the optical path, the combined lens has a different focal length to effect a different magnification.

3,675,999
PHOTOCOPYING APPARATUS PROVIDED WITH ORIGINAL INVERTING DEVICE
Shigehiro Komori, Kawasaki-shi, and Hiroyuki Hattori, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 6, 1970, Ser. No. 34,927
Claims priority, application Japan, May 10, 1969, 44/35,949
Int. Cl. G03b *27/62*
U.S. Cl. 355—8 **8 Claims**



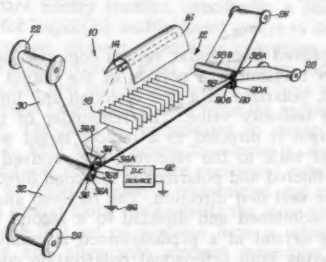
A photocopying machine with a reciprocating original carrier and a slit exposure system of this invention provides a device for inverting an original so as to copy both sides of the original on one copy paper in a single copying operation.

3,676,000
DATA ENCODING AND DECODING APPARATUS AND METHOD
George L. Mayer, Jr., New Orleans, La., and David L. Dobbins, McLean, Va., assignors to Coded Signatures, Inc., New Orleans, La.
Filed Dec. 31, 1970, Ser. No. 103,204
Int. Cl. G03b *27/68*
U.S. Cl. 355—52 **22 Claims**



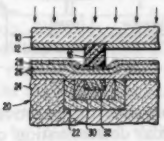
Apparatus and method or system for encoding and recording coded data, and retrieving the same by decoding and display thereof for direct viewing or for viewing on a screen. The method comprises utilizing a multiple array lens, otherwise known as a "fly's eye" lens, for "scrambling" the data to be encoded and also for "unscrambling" or decoding the data. The encoding means includes photographic means for making a negative film, or a direct positive photo, of the image appearing at the back face of the encoding lens. In the case of a photographic negative, a positive print is made therefrom. The positive print, whether made directly or indirectly, is applied to a paste-up sheet, which is photographed and the negative thereof is used with a masking sheet to expose an offset printing plate. Alternatively, a positive printing plate can be made directly from the paste-up sheet and used for ink-printing the encoded data. The system includes decoding apparatus for converting the encoded data back to its original form for viewing and, if desired, display and comparison with other matter, which may appear on the same document containing the encoded data.

3,676,001
PROCESS FOR MAKING DUPLICATES OF MICROFILM
Carl Botkin, Glenview, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed May 22, 1970, Ser. No. 39,803
Int. Cl. G03b *27/02*
U.S. Cl. 355—132 **6 Claims**



Duplicates of reels of microfilms are made by bringing the original film into surface contact with the light sensitive film which is to become the duplicate and then exposing the two films to actinic radiation. The film strips are passed through an electrical field imparting oppositely poled electrostatic charges to the film strips so that they are electrostatically attracted to one another being held in registration during the contact exposure while moving at speeds ranging from 8 feet to 50 feet per minute. The electrostatic charge is generated by corona emission electrodes or contact electrodes.

3,676,002
OPTICAL MASK WITH INTEGRAL SPACERS AND METHOD OF MAKING
Wayne M. Moreau, Wappingers Falls, and Hans R. Rottmann, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,802
Int. Cl. G03b *27/28*
U.S. Cl. 355—133 **9 Claims**



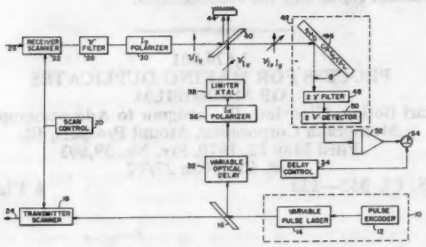
This is an optical mask primarily for use in the manufacture of solid state semiconductor devices. The mask

has integral spacer portions which intimately contact the surface of the device during the stage in the processing when the photoresist is exposed. These integral spacers not only protect the mask during contact with the device but also provide improved devices because of superior optical characteristics.

3,676,003
LASER RADAR SYSTEM

Charles S. Naiman, Brookline, and Stuart D. Pompian, Waban, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed June 4, 1970, Ser. No. 43,458
Int. Cl. G01c 3/08
U.S. Cl. 356—5 **13 Claims**

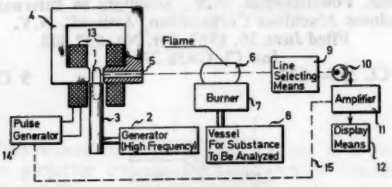


An improved laser radar system comprises a variable pulse laser transmitter a portion of the output of which is delayed, polarized in a first direction and limited to a maximum intensity value. The remainder of the transmitter output is directed to a remote target whereby it is reflected back to the receiver. The received reflected energy is filtered and polarized in a second direction normal to the said first direction. The received and delayed energy is combined and directed to a second harmonic generating crystal at a predetermined orientation. Only energy having both orthogonal polarization components operates to produce second harmonic energy which is filtered and detected by a second harmonic detector. The detector output signal is compared with the delayed signal to establish the distance to the target.

3,676,004
DEVICE FOR THE SPECTROCHEMICAL DETERMINATION OF THE CONCENTRATION OF AN ELEMENT IN A SAMPLE

Hans Prugger and Reimund Torge, Heidenheim, Germany, assignors to Carl Zeiss-Stiftung, doing business as Carl Zeiss, Heidenheim, Germany

Filed Dec. 17, 1970, Ser. No. 99,075
Claims priority, application Germany, Dec. 23, 1969, P 19 64 469.0
Int. Cl. G01j 3/30, 3/42
U.S. Cl. 356—87 **13 Claims**

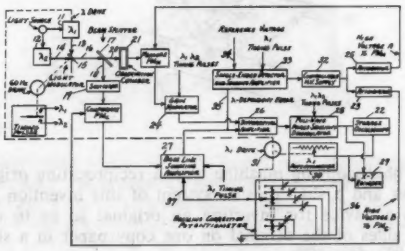


The invention represents an improvement in devices for the spectrochemical determination of the concentration of a particular element in a sample. A single radiation source is caused, by a frequency-shifting technique, to emit a time-alternating succession of two radiations, one of which is at a specific frequency that is characteristic of the particular element, and the other of which represents a slight spectral shift from the first radiation. The radiations are passed through the sample in time-alternation, and a synchronously commutated detector differentially evaluates the relation between two transmissions, attributable to the respective radiations. When the amplifier characteristic is logarithmic, the differential evaluation provides the quotient of the two detected transmissions.

3,676,005
RAPID-SCANNING DUAL WAVELENGTH SPECTROPHOTOMETER

Britton Chance, % Johnson Research Foundation, Medical School, University of Pennsylvania, Philadelphia, Pa. 19104

Filed Mar. 17, 1971, Ser. No. 125,252
Int. Cl. G01j 3/42
U.S. Cl. 356—97 **11 Claims**

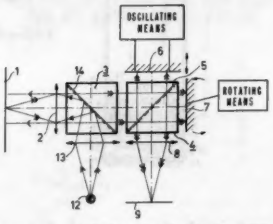


A dual wavelength spectrophotometer for recording reactions in turbid suspensions of biological materials, wherein one of the inspection wavelengths is held constant and the other inspection wavelength is cyclically varied over a range of the order of 40 nm. and at a rate of the order of 20 nm./sec. A noise-compensating photomultiplier is included to compensate for light source noise. A tapped potentiometer is employed for base line correction, and a comparator and error detector is employed to adjust the photomultiplier high voltages for correcting wavelength-dependent sensitivity errors.

3,676,006
METHOD OF MEASURING THE ROUGHNESS OF A SURFACE

Christiaan Hendrik Frans Velzel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 22, 1969, Ser. No. 859,989
Claims priority, application Netherlands, Sept. 24, 1968, 6813608
Int. Cl. G01b 9/02
U.S. Cl. 356—109 **2 Claims**



The invention relates to a method of measuring the roughness of a surface. The invention also relates to an apparatus for carrying out the method.

3,676,007

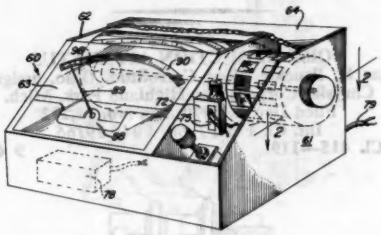
DIRECT READING FILTER PHOTOMETER

Raymond W. Kiess, Miami, Fla., assignor to Kiess Instruments, Inc., Miami, Fla.

Continuation-in-part of application Ser. No. 692,525, Dec. 21, 1967. This application Feb. 9, 1971, Ser. No. 113,881

Int. Cl. G01j *1/42, 3/48*

U.S. Cl. 356—184 13 Claims



A direct reading filter photometer for chemical analysis is provided with a plurality of meter scales and a plurality of color filters with interlocking means for automatically selecting the scale and filter appropriate to the specific analysis to be performed.

3,676,008

METHOD AND ELECTRO-OPTICAL SYSTEM FOR INSPECTING BODIES SUCH AS TILES

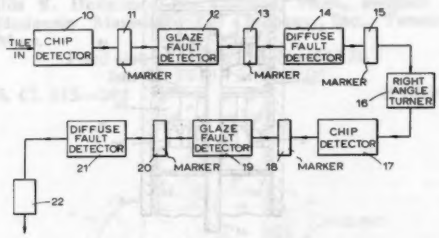
Robert N. West, Orpington, Richard A. Brook, Bromley, Richard G. Shaw, Meopham, near Gravesend, Daniel R. Lobb, Farnborough, and Anthony J. Allnutt, Chislehurst, England, assignors to British Scientific Instrument Research Association, South Hill, Chislehurst, Kent, England

Filed Jan. 16, 1970, Ser. No. 3,540

Claims priority, application Great Britain, Jan. 17, 1969, 2,971/69

Int. Cl. G01n *21/32*

U.S. Cl. 356—196 13 Claims



A method of, and system for, automatically inspecting regular bodies, such as ceramic glazed tiles, for visual defects in its boundary and upper surface.

Each body is moved through stations having electro-optical devices for determining various classes of defects in the body. The devices which are used to inspect the upper surface of the body scan the surface and convert light diffusely or specularly reflected therefrom into a waveform composed of a series of pedestals which are analysed for defect-indicative information. The device used to inspect the boundary of the body acts to determine whether there are any irregularities, such as indentations or projections, in the boundary. Various techniques are provided to improve the validity of the defect detecting operation.

3,676,009

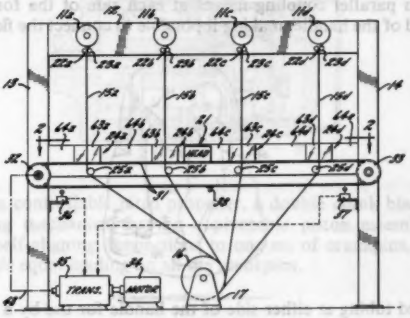
PHOTOELECTRIC DISCONTINUITY AND THE LIKE DETECTOR FOR MULTIELEMENT ARRAYS

Roger C. Brendemuehl, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Dec. 22, 1970, Ser. No. 100,708

Int. Cl. G01n *21/18*

U.S. Cl. 356—199 23 Claims



A radiant energy scanner, specifically a photoelectric scanner, for inspecting multielement arrays to detect missing or broken element conditions comprises a radiant energy transmit-receive head spaced from one side of the array and first and second sets of surfaces with different degrees of reflectance spaced from the opposite side of the array. The head is reciprocated to sweep a radiant energy, i.e., light beam, across the elements, and the first and second sets of surfaces are positioned relative to the elements so that the beam is transmitted and received at any given instant along substantially the same optical axis. Further, the first set of surfaces have a relatively high reflectance and align with element inspection areas to complete a first set of alternate beam transmission paths which have a relatively low attenuation level that is momentarily increased to a slightly higher level each time the beam traverses an element. The second set of surfaces have a relatively low reflectance and align with the spaces adjacent the inspection areas to complete a second set of alternate beam transmission paths which have a relatively high attenuation level. A logic circuit is included to provide an output indication of a missing element condition when the intensity of the received beam changes in immediately successive steps from a relatively low level, to a relatively high level, and back to the relatively low level, without an intervening change to an intermediate level.

3,676,010

APPLICATORY-LIQUID FEEDING AND APPLYING APPARATUS

Paul W. Kirch, 2325 Kellogg Court, Altadena, Calif. 91001

Continuation-in-part of application Ser. No. 759,710, Sept. 13, 1968, which is a continuation-in-part of application Ser. No. 565,302, July 14, 1966. This application Mar. 6, 1970, Ser. No. 17,267

Int. Cl. A46b *11/02*

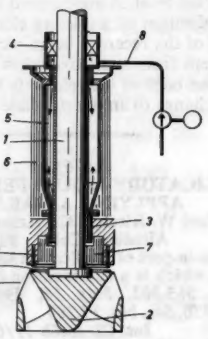
U.S. Cl. 401—188 11 Claims

The specification discloses a pressurized applicatory-liquid feeding and applying apparatus including a pressurizable storage reservoir adapted to contain an open-topped can of paint therein in a manner whereby most of the interior of the reservoir is effectively sealed from the paint adapted to be contained within the open-topped paint can so as to prevent the paint from getting on major portions of the interior of the reservoir, which would subsequently require excessive cleaning effort. The apparatus includes a length of flexible feed tubing extending from

the pressurized open-topped paint can within the reservoir to an applicatory brush means for connection to a coupling means (in a preferred form either of two different coupling means) carried by the brush means and extending thereinto at a location laterally adjacent and offset from the forward end of the handle and its junction to the rear end of a brush body portion in a position such as to provide minimum interference with a hand holding the handle and brush. In a preferred form of the invention, there are two parallel coupling means at each side of the forward end of the handle, making it possible to connect the flexible

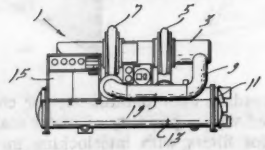
feed tubing at either side of the handle for use by a right-handed person or a left-handed person. The coupling means is effectively a part of and in communication with a centrally angularly forwardly directed interior flow passage means which, at a central position within the brush body portion, is provided with a normally finger or thumb operable valve at a symmetrically centrally positioned location suitable for operation by a control finger of either a painter's right hand or left hand, thus facilitating the easy pressurized feeding and application of paint or other liquid to a surface by either a right-handed or a left-handed painter.

3,676,011
LIQUID-SEALED CENTRIFUGAL PUMP
Kurt Reif, Graz, Austria, assignor to Maschinenfabrik Andritz Actiengesellschaft, Graz-Andritz, Austria
Filed Mar. 27, 1970, Ser. No. 23,334
Claims priority, application Austria, Mar. 31, 1969, A 3,132/69
Int. Cl. F01d *11/00*
U.S. Cl. 415—111 **7 Claims**



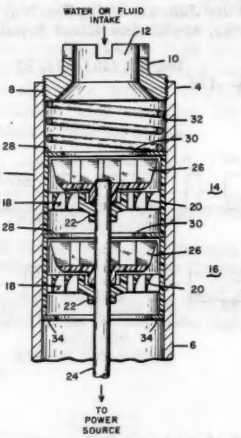
An impeller is secured to a rotatable shaft to rotate therewith. A shaft seal is arranged to seal said shaft on one side of said impeller. A guide bearing cooperates with said shaft and is disposed between said shaft seal and said impeller and arranged to permit of a leakage of a predetermined amount of liquid from said one side of said impeller into said receiving chamber when said impeller coasts to a stop from a rotation at a predetermined, normal speed in such a sense that liquid is delivered by said impeller on said one side thereof. A standstill seal is disposed between said guide bearing and said impeller and arranged to be open during a rotation of the impeller in said sense and to be closed when said impeller is stopped. Means are provided which define a receiving chamber that is disposed between and communicates with said shaft seal and said guide bearing and adapted to hold said predetermined amount of liquid. Means are provided to supply a sealing liquid to said receiving chamber.

3,676,012
NOISE REDUCTION APPARATUS
Thomas H. Brockie, West Carrollton, Ohio, assignor to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 2, 1970, Ser. No. 94,272
Int. Cl. F01n *1/00;* **F04d** *29/66*
U.S. Cl. 415—119 **9 Claims**



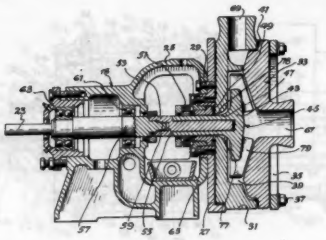
An elongated, rectangular baffle located in the cross-over pipe of the multi-stage compressor of water chiller apparatus.

3,676,013
AXIAL FLOW PUMP
Robert V. Albertson, 2100 Shady Wood Road, Minneapolis, Minn.
Filed Sept. 23, 1970, Ser. No. 74,564
Int. Cl. F04d *1/00, 29/02, 29/00*
U.S. Cl. 415—128 **6 Claims**



A multi-stage axial flow pump designed to pump fluids which may contain solid particles, without jamming or damage to the working parts thereof. The pump comprises a plurality of stages each including a stator element and a rotor element contained within the stator element. The stages, in turn, are located within a cylindrical housing. A compression type spring is located within the housing and normally urges the stator members against one another and against one end of the housing so that they remain stationary during normal operation. However, in the event a foreign particle becomes lodged between the rotor and the stator, the stator is permitted to move or shift in axial position such that the foreign particle may pass therethrough.

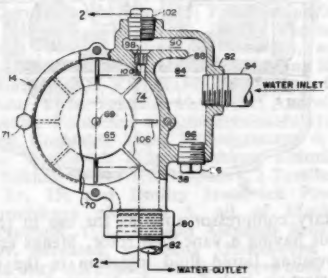
3,676,014
PUMP
Robert H. Bevan, Romulus, and Vincent D. Buffone, Seneca Falls, N.Y., assignors to Goulds Pumps, Incorporated, Seneca Falls, N.Y.
Filed Aug. 28, 1970, Ser. No. 67,866
Int. Cl. F01d *1/02, 9/00*; F23k *31/02*; F04b *17/00, 35/04*
U.S. Cl. 415—200 3 Claims



A pump impeller, especially useful in the pumping of corrosive and abrasive liquids, includes a unitary blade-shaft member of a material such as a corrosion resistant vitreous or ceramic material, which is impracticable for threading or other such shaping operations or has insufficient strength to withstand normal forces on threads or other such elements thereof. To provide for affixation to means for rotating the impeller in a pump, a threadable shaft extension is employed, inserted into and cemented in place in a hollow portion of the blade-shaft member and threaded or otherwise formed or machined at its other end for connection with suitable driving means. By making the blade-shaft member so that corrosion-resistant shaft portion is long enough to extend past a seal, contact of the pumped liquid with the impeller is limited to the corrosion-resistant part thereof.

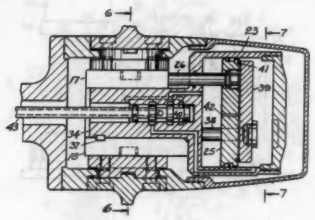
Also disclosed are pumps and motor-pump combinations including the mentioned impellers, as well as methods for the manufacture of the impellers.

3,676,015
WATER MOTOR
Willis K. Hodgman, Jr., Taunton, Mass., assignor to Hodgman Manufacturing Company, Inc., Taunton, Mass.
Filed Oct. 28, 1970, Ser. No. 84,750
Int. Cl. F01d *15/06, 9/00*
U.S. Cl. 415—202 3 Claims



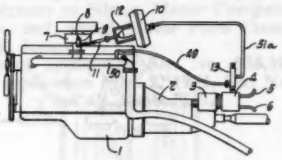
An easily maintained, efficient, low turbulence water motor in which water is projected from a nozzle to the blades of an impeller and expelled through an outlet in straight alignment with the nozzle. The water enters the nozzle through an inlet chamber integral with the body of the motor and providing a sump for retention of dirt or other particulate matter in the water.

3,676,016
CONTROLLABLE PITCH PROPELLERS
Arne Feroy, 1921 S. 291st St., Federal Way, Wash. 98002
Filed Sept. 21, 1970, Ser. No. 73,915
Int. Cl. B63h *3/08*
U.S. Cl. 416—157 9 Claims



In a controllable pitch propeller, a double crank blade-turning mechanism having a pivotable piston assembly with self-aligning connections to one set of crankpins, to provide equal loading on all the crankpins.

3,676,017
SPEED CONTROL
Joseph C. Castleberry, Birmingham, Ala., assignor to Altec, Inc., Birmingham, Ala.
Filed Apr. 27, 1970, Ser. No. 31,906
Int. Cl. F04b *49/00*
U.S. Cl. 417—34 3 Claims

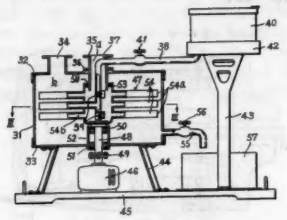


The disclosure herein is of a speed control for use particularly with hydraulically operated mechansms which demand increased pressure when a load is imposed thereon, such mechanisms being primarily engine driven by hydraulic pumps in a hydraulic system in which it is desirable to regulate the speed by in turn regulating the throttle by which the engine speed is actually controlled. The actual control of the mechanism is effected by a valve which receives the pressure from the hydraulic system, and upon increased demand therefor in turn operates a valve member to direct vacuum developed in the engine by which the entire mechanism is driven, to a vacuum actuator which is in turn connected to the throttle and thereby upon increased vacuum produced, in turn increases the speed of the engine whereby the pressure in the hydraulic pump driven thereby is likewise increased, the hydraulic and vacuum systems being entirely separate to obviate any possibility of hydraulic balance which would prevent return of the engine to normal speed when the pressure is removed from the hydraulic system.

3,676,018
PUMPING APPARATUS
Saburo Shimoi, Kyoto, Japan, assignor to Shimadzu Seisakusho, Ltd., Kyoto, Japan
Original application Nov. 25, 1968, Ser. No. 778,539, now Patent No. 3,584,978. Divided and this application June 12, 1970, Ser. No. 57,864
Int. Cl. F04f *11/00*
U.S. Cl. 417—72 5 Claims

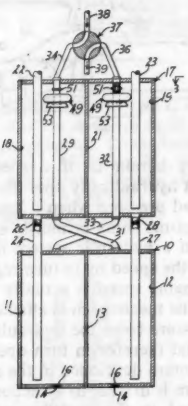
A pumping apparatus includes a radially extending rotary fluid passage member within a pumping casing. The rotary fluid passage member is communicated with

low pressure side within the casing through its inlet end and with high pressure side within the casing through its outlet end. Liquid is intermittently supplied into the fluid passage member through the inlet end to form liquid partitions within the fluid passage member. The liquid



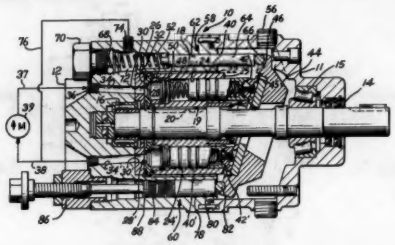
partitions are driven radially outwardly through the fluid passage member under the centrifugal force produced by the rotation of the fluid passage member so as to positively transfer the fluid in the low pressure side through the passage member into the high pressure side, thus effecting pumping action.

3,676,019
FLUID PUMP
Douglas R. Self, 100 Joy Road, Birmingham, Ala. 35235
Filed Feb. 24, 1971, Ser. No. 118,405
Int. Cl. F04f *1/06*
U.S. Cl. 417—121 **10 Claims**



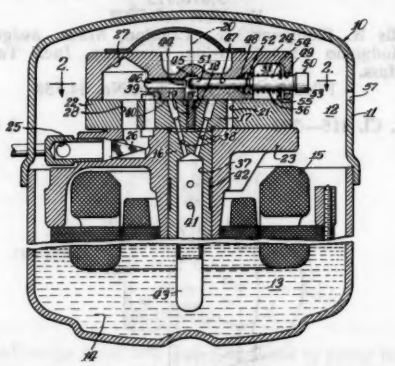
Fluid pump having upper and lower pairs of laterally disposed chambers with liquid receiving openings in lower chambers. Liquid discharge conduits extend above upper chambers and communicate with lower portion of upper chambers. Lower portion of one chamber of upper chambers communicates with lower portion of one chamber of lower chambers while lower portion of other chamber of upper chambers communicates with lower portion of other chamber of lower chambers with check valves preventing flow of liquid from upper chamber to lower chamber. A first conduit communicates with upper portion of said one chamber of upper chambers and upper portion of said other chamber of lower chambers while a second conduit communicates with upper portion of said other chamber of upper chambers and upper portion of said one chamber of lower chambers. Gas introduced alternately into first conduit as exhausted through second conduit and alternately into second conduit as exhausted through first conduit.

3,676,020
COMPENSATED HYDRAULIC DEVICE
Howard P. Andreasen and Jay H. Ankeny, West Des Moines, Harold W. Foddy, Woodward, and David W. Reynolds, West Des Moines, Iowa, assignors to Delavan Manufacturing Co.
Filed Feb. 24, 1970, Ser. No. 13,722
Int. Cl. F04b *1/26*
U.S. Cl. 417—222 **16 Claims**



An axial piston hydraulic device having an angularly tiltable cam plate includes a pair of tilt control piston assemblies, one of which includes a plurality of resilient, preferably bimetal, discs. When the pressure or temperature of the fluid changes, the discs deform in response thereto to effect a controlled change in the tilt of the cam plate to adjust the flow rate of the device compensating for flow rate changes resulting from the change in pressure or temperature. In addition, the plane of the pivot axes of the pistons of the device may be offset from the pivot axis of the cam plate to further modify the flow rate resulting from the action of the discs.

3,676,021
RADIAL UNLOADER VALVE FOR THRU-SLOT ROTARY COMPRESSOR
Milton Young Warner, Evansville, Ind., assignor to Whirlpool Corporation
Filed Oct. 9, 1970, Ser. No. 79,399
Int. Cl. F04b *49/02, 49/08*
U.S. Cl. 417—299 **17 Claims**



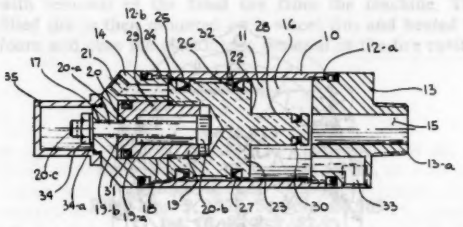
A rotary compressor such as for use in refrigeration apparatus having a vane-type rotor. Means are provided for alleviating liquid fluid ingestion in the compressor during start-up including valved passage means for returning high pressure liquid fluid from the compression chamber to the suction inlet during start-up. The passage means includes means for passing liquid fluid from a muffler chamber into the head space during start-up. The valve means is responsive to the pressure conditions within the compressor to substantially throttle such liquid fluid transfer during normal operating conditions of the compressor.

3,676,022

PNEUMATIC/HYDRAULIC PRESSURE ACTUATED POSITIVE DISPLACEMENT PUMP

Richard S. Pauliukonis, 6660 Greenbriar Drive, Cleveland, Ohio 44130

Filed Nov. 25, 1970, Ser. No. 92,727
Int. Cl. F04b *17/00, 35/00*
U.S. Cl. 417—392 2 Claims



A pneumatic or hydraulic pressure actuated positive displacement pump of reciprocating type with piston assembly shiftable from one open pump position enabling pump priming through the void provided in the pump chamber when the working fluid pressure is relieved, into the second position for pumping out the contents trapped in said pump chamber upon the application of the working fluid to the opposite end of said piston assembly, and subsequent return of the piston to the original position when said working fluid is relieved, by the suction force that is generated during the forward piston movement when it is energized by pressure of the working fluid; piston assembly comprising one large working piston with U-cup seals at extremities and oriented so as to expand under pressure for better sealing, and two smaller pistons at each end of large piston face, one for acting as a suction cup to return piston assembly to the original position when working fluid pressure is relieved from the piston energization port, including appropriate seals, another piston at the opposite end for plugging-off fluid pumped from the supply source in order to facilitate improved pumping with minimum slippage.

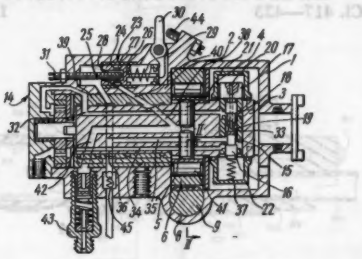
3,676,023

FUEL PUMP FOR INTERNAL COMBUSTION ENGINES

Petr Ivanovich Andrusenko, Ulitsa Selskokhozyaistvennaya 3, kv. 44; Kint Evgenievich Dolganov, ulitsa Patorzhinskogo 14, kv. 5; Alexandr Ivanovich Kovalev, ulitsa Zhitomirskaya 8, kv. 25; Pavel Iosipovich Berezovsky, ulitsa Rybalskaya 20, kv. 9; Vladimir Ilich Dmitrenko, Nikolai Pavlovich Shukshin, and Jury Feodosievich Gutarevich, all of ulitsa Ivana Kudri 32, Obschezhitie KADI, Kiev, U.S.S.R.; Vladimir Grigorievich Kislov, ulitsa Tekstilei 40, kv. 11; Andrei Vasilievich Chevtaev, polschad III Internatsionala 31; Eduard Ivanovich Koshman, ulitsa Molodezhnaya 4, kv. 26; Vladimir Vasilievich Filippov, shosse Entuziastov 2, kv. 21; Mikhail Sergeevich Dolganov, 2 Textilny pereulok 1, kv. 15; and Dmitry Ivanovich Prosnjakov, Nizhegorodskaya ploschad 3, all of Moskovskaya oblast, Noginsk, U.S.S.R.; and Alexandr Brokopievich Bakharev, deceased, by Anna Mikhailovna Menshikova and Jury Alexandrovich Bakharev, both of ulitsa Ljublinskaya 39/2, kv. 31; and Galina Alexandrovna Ashikhmina, ulitsa Novo-Alexeevskaya 4, korpus 2, kv. 59, Moscow, U.S.S.R., administrators

Filed Jan. 6, 1970, Ser. No. 937
Int. Cl. F04b *3/00, 19/02;* G05d *13/10*
U.S. Cl. 417—253 2 Claims

A fuel pump for internal combustion engines, comprises a housing accommodating a low pressure pump and a high pressure pump, the latter being connected to an automatic fuel injection advance device installed within the housing. A fuel feeder is installed in the housing for feeding fuel batchwise to the high pressure pump and a slide valve of a centrifugally sensitive element is also mounted in the housing and hydraulically connects the low pressure pump to the feeder and to the automatic fuel injection advance device.

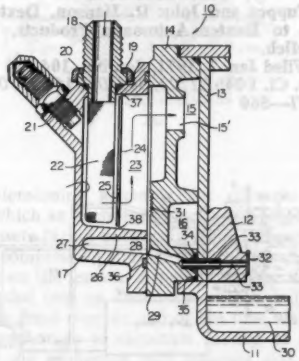


3,676,024

APPARATUS FOR SEPARATING LUBRICANT FROM A REFRIGERANT LUBRICANT MIXTURE IN A RECIPROCATING TYPE AUTOMOTIVE AIR CONDITIONER COMPRESSOR

Seiji Akaike, Atsugi, and Akira Morinaga, Aiko Atsugi, Japan, assignors to Nissan Motor Company, Limited, Yokohama, and Atsagi Motor Parts Company, Limited, Atsugi, Japan

Continuation of application Ser. No. 838,104, July 1, 1969. This application Mar. 2, 1971, Ser. No. 120,362
Int. Cl. F04b *39/02*
U.S. Cl. 417—372 7 Claims



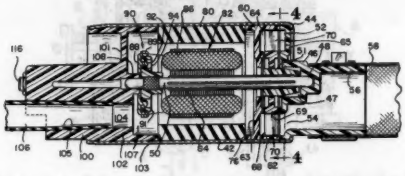
Disclosed herein is an apparatus for separating lubricant from a refrigerant-lubricant mixture circulating in a reciprocating type automotive air conditioner. The apparatus includes a strainer mounted within a first chamber for separating the lubricant from the mixture, a pair of spaced passages for the lubricant and refrigerant, respectively, and for interconnecting the first chamber with a second separating chamber, a partition for keeping the separated oil isolated from the mixture, a passage provided between the second separating chamber and a recess provided by the partition, and a lubricant passage for passing the lubricant from the recess to the oil reservoir of the compressor.

3,676,025

ELECTRICAL IN-TANK FUEL PUMP

John E. Shultz, Davison, Mich., and Wilfred W. Herderhorst, Fort Wayne, Ind., assignors to Tokheim Corporation, Fort Wayne, Ind.

Filed Apr. 23, 1970, Ser. No. 31,191
Int. Cl. F01d 5/10; F04b 17/00, 35/04
U.S. Cl. 417—423 17 Claims



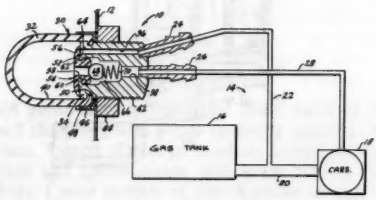
An electrical motor and pump unit for mounting in an automotive or other combustion-engine fuel tank to pump liquid fuel to the engine. A circular regenerative fuel pump has its rotor on the armature shaft of a permanent-magnet motor mounted in a common cylindrical housing. Rotor blade spacing follows an orderly mathematical progression. The ferrite motor field magnet is a relatively thin-walled cylinder having large air-gap clearance from the armature and lying against the cylindrical housing which forms a return flux path. Full pump delivery flow passes through the large air gap, and hydraulic gain from improved flow through such air gap offsets any electrical loss. The use of a peripheral thin-wall magnet provides open interior space which permits a large commutator and brush contact area.

3,676,026

PRIMER PUMP

Willis E. Tupper and John R. Hanson, Dexter, Mich., assignors to Dexter Automatic Products, Co., Inc., Dexter, Mich.

Filed Jan. 7, 1971, Ser. No. 104,654
Int. Cl. F04b 21/02, 39/10; F16k 15/00
U.S. Cl. 417—560 5 Claims



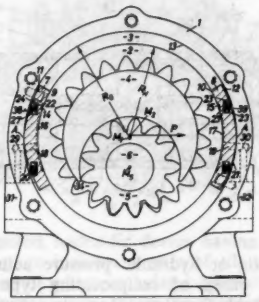
Fuel primer apparatus for use in connection with internal combustion engines for vehicles such as snowmobiles and the like. The apparatus is characterized by its relatively light weight and compact construction, and it is especially suitable for mounting on a snowmobile cowling formed of a thin sheet of plastic material. It comprises a unitary structure of a primer bulb and a check valve assembly which is constructed and arranged so that a pressure drop at its discharge end induced by operating conditions will be insufficient to induce undesired flow of fuel through the apparatus to flood the engine.

3,676,027

CRESCENT MACHINE

Hans Molly, 48 Dr. Eugen-Essig-Str., 7502 Malsch, Germany

Filed Mar. 11, 1971, Ser. No. 116,728
Claims priority, application Germany, Mar. 14, 1970, P 20 12 149.7; Jan. 7, 1971, P 21 00 435.3
Int. Cl. F01c 1/10; F03c 3/00; F04c 1/06
U.S. Cl. 418—71 7 Claims



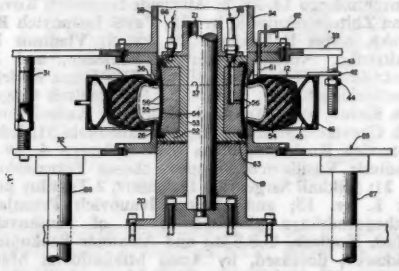
A hydraulic pump or motor has a spur gear which engages an internal ring gear and a crescent between one side of the two gears. The machine casing has a cavity substantially larger than the ring gear. Two rocker shoes are between the casing wall and the ring gear on opposite sides of the ring gear. These shoes support the ring gear while permitting it to move along a line connecting the centers of the two gears.

3,676,028

APPARATUS FOR BUILDING A FOAM INFLATED TIRE

Christopher E. Christie, Akron, and Eugene Earl Martin, Hudson, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

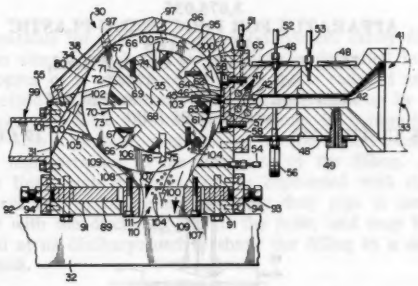
Filed Feb. 16, 1971, Ser. No. 115,264
Int. Cl. B29d 3/00, 27/00; B29h 5/02
U.S. Cl. 425—38 30 Claims



An apparatus for at least partially filling a molded and vulcanized tire with foamable, elastomeric material. The apparatus has a pair of parallel, upper and lower bead seats on which a vulcanized tire is mounted. An inflatable ring is moved into position for annularly engaging and constricting the tire to maintain the beads of the tire in firm seated relation against the bead seats. An externally,

accessible chamber is movable into communicating relation with the annular cavity of the tire mounted on the bead seats. Unfoamed, elastomeric material is then placed in the chamber and a ram is used to force the material from the chamber into the tire cavity. The ram carries a bladder which is centered in the space between the bead seats and inflated to compress the material within the tire cavity against the inner crown of the tire. The various components are then moved out of interfering relation with removal of the filled tire from the machine. The filled tire is then mounted on a wheel rim and heated to foam and cure the elastomeric material in the tire cavity.

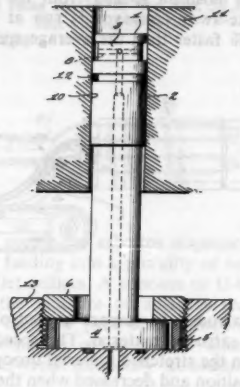
3,676,029
PELLETIZING APPARATUS
Peter Hopkin, 13 Colonial Circle, Hampton, N.H. 03842
Filed Apr. 9, 1970, Ser. No. 26,969
Int. Cl. B29b *1/02*
U.S. Cl. 425—67 **8 Claims**



An underwater pelletizer has a generally cylindrical, elongated chamber with a generally cylindrical, drum, having longitudinal cutter blades, eccentrically rotatable therein to form a pump. A narrow, linear, longitudinal row of extrusion orifices in the side wall of the chamber, discharges a row of viscous strands from which successive rows of viscous pellets are simultaneously cut off by each blade and driven tangentially into a longitudinal effluent port to clear the orifices of stray pellets. The chamber also includes a longitudinally extending influent port for liquid under pressure which sweeps around the chamber periphery to also clean the orifices while solidifying the viscous plastic.

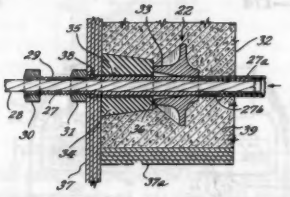
3,676,030
APPARATUS FOR LUBRICATION OF COMPRESSION TOOLS FOR POWDER METALLURGICAL PURPOSES
Horst Roepenack, Bruchkobel, Dieter Nowak, Kohl, and Fritz Ploger, Kleinostheim, Germany, assignors to NUKEM Nuklear-Chemie und -Metallurgie, GmbH., Wolfgang, near Hanau am Main, Germany
Filed Oct. 22, 1969, Ser. No. 868,484
Claims priority, application Germany, Apr. 22, 1969, P 19 20 308.8
Int. Cl. B30b *11/00, 15/02*
U.S. Cl. 425—78 **10 Claims**

There is provided an apparatus for the lubrication of compression tools for power metallurgical purposes comprising a lower die adapted to supply lubricant film, a guide for the lower part having a slightly larger diameter to insure production of a uniform lubricant film and a foot on the opposite end of the die positioned within a slightly larger distance ring which is held in position by a fixing nut, the space between the die foot and fixing nut



compensating for production errors in the axis parallelism of the die bore.

3,676,031
POST-TENSIONING SYSTEM
Frederick M. Stinton, Woodbridge, Ontario, and William M. Slater, Toronto, Ontario, Canada, assignors to Conenco International Limited
Filed May 28, 1970, Ser. No. 41,369
Int. Cl. B28b *7/16*
U.S. Cl. 425—111 **9 Claims**

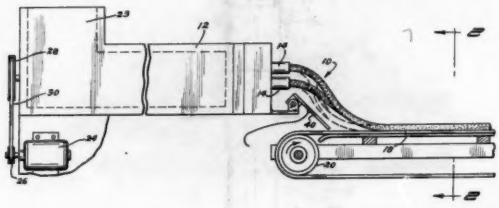


A post-tensioning assembly for concrete slabs and beams in which an anchorage block for a tendon has reinforcing gussets facing outwardly from the concrete so as to impose compressing stresses therein in response to tension forces on the tendon. A protective tube is removably screw-threaded into an anchorage sheath and covers the cable and is fitted over an end of the tube which projects from the anchorage to eliminate fouling of the conical opening of the anchorage with concrete and bonding of the concrete to the cable. The anchorage is simple and easily formed so that a single anchorage accommodates plural tendons.

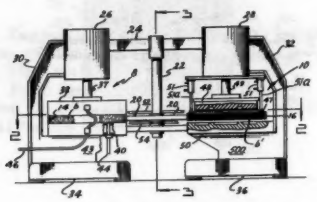
3,676,032
EXTRUSION CONTROL APPARATUS
Byron W. Meyer, Minneapolis, and William F. Wright, St. Paul, Minn., assignors to The Pillsbury Company, Minnneapolis, Minn.
Filed Mar. 9, 1970, Ser. No. 17,389
Int. Cl. A21c *3/04*
U.S. Cl. 425—140 **4 Claims**

The diameter of a cylinder of extruded plastic food material is maintained within close tolerances by extruding the cylinder through a nozzle and allowing it to pass

from the nozzle a short distance in an unsupported condition to a take-away conveyor which carries the product to a cutter. The extruder from which the material is expelled comprises one plate of a capacitor. The other plate is located in a position spaced from the extruded material. The take-away conveyor is run at a speed from about 2 to 20% faster than the average speed of the material being extruded to impart a controlled degree of stretch in the extruded material. The speed differential is increased when the stretched material droops below a predetermined position and decreased when the extruded food material adjacent the nozzle rises above a predetermined position as sensed by the changes in capacitance between the plates as a result of the change in position of the extruded food material.



3,676,033
APPARATUS FOR MAKING THERMOPLASTIC CELLULAR PRODUCTS
Robert B. Buonaiuto, 12 Bayview Road, Ipswich, Mass. 01938
Original application Apr. 30, 1968, Ser. No. 725,430 Divided and this application Apr. 16, 1971, Ser. No. 134,708
Int. Cl. B29c 3/04; B29d 27/00; B29g 7/02
U.S. Cl. 425—174 **7 Claims**

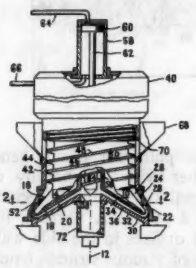


An apparatus for making thermoplastic cellular plastic products and which has preform and final forming stations. The apparatus features the use of a pair of frames which are interchanged at the said preform and final form stations by a transfer mechanism. Each frame is charged with thermoplastic beads while held between platens at the preform station for the introduction of heat to form a cellular preform blank and is then moved to the final form station where the blank is given a final shape between another pair of platens.

3,676,034
EXTRUDER MIXING SCREW
Roland Norbert Wendricks, St. Charles, Ill., assignor to American Can Company, New York, N.Y.
Filed May 1, 1970, Ser. No. 33,599
Int. Cl. B29f 3/00
U.S. Cl. 425—208 **5 Claims**

A single stage extruder screw wherein, in addition to having a continuous helical flight for advancing thermoplastic material, such as food grade PVC, there is provided radial mixing pins arranged in nine circumferential rows which are axially spaced along the screw for mixing the advancing thermoplastic material. Seven of the nine rows are incomplete circumferential rows of radial pins, the rows being interrupted by the helical flight and aligned to diagonally bisect a portion of a helical channel defined by the adjacent turns of the helical flight on either side of the location at which each row is interrupted by the helical flight. Further, one complete flight turn is cut back on the extruding end of the screw thereby leaving a flightless root portion at this end of the screw. Finally, the remaining two of the nine rows are circumferentially arranged about this end of the screw at the flightless root portion and are complete rows of radial mixing pins.

3,676,035
APPARATUS FOR PROCESSING PLASTIC MATERIALS
Hans A. Eckhardt, 55 Crescent Bend, Allendale, N.J. 07401
Filed Sept. 18, 1968, Ser. No. 760,515
Int. Cl. B29f 1/00
U.S. Cl. 425—203 **19 Claims**



An apparatus for extruding, injection molding, blow molding and transfer molding plastic materials comprise a feed screw pressing plastic material over a rotor with a diameter which first increases in order to mill and shear the material over a spreading circumference, and then decreases in order to work and stretch the plastic material centripetally. The feed screw is closely surrounded by a barrel, and the rotor by a first and a second housing ending in a discharge opening, through which a flighted screw extends in a closely surrounding cylinder. The flighted screw is firmly attached to the end of the rotor for extrusion operation. For injection molding, the flighted screw is mounted for axial and rotational movement through a bore in the rotor. For piston injection molding, a piston extends through the bore of the rotor. The generatrices of the rotor and housing surfaces form acute angles between opposite proximate sections of these surfaces, corresponding to the requirements of different plastic materials. Rotor and housing surfaces are provided with protrusions to achieve specific processing tasks. An opening in the housing near the maximum rotor surface serves to devolatilize gases and vapors. Rotor and housing are axially movable to each other, to vary and control the processing spaces therebetween.

3,676,036

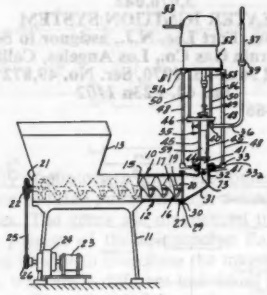
APPARATUS FOR EXTRUDING CANDY FILLINGS HAVING A HIGH PERCENTAGE OF SOLIDS

Anthony J. Rossi, 40 Kashey St., Clifton, N.J. 07043

Original application Apr. 25, 1968, Ser. No. 724,120, now Patent No. 3,556,021, dated Jan. 19, 1971. Divided and this application May 4, 1970, Ser. No. 46,588

Int. Cl. A21c *11/16*

U.S. Cl. 425—209 5 Claims



Apparatus for extruding high solid content candy fillings to size in which the candy filling is deposited into the hopper of a worm type extruder and is reduced and pressurized by this extruder and is then picked up by a high pressure high viscosity piston pump in communication with a reducer, and ejected by the piston pump under high pressure to the final size of the filling. A Teflon lined high pressure hose is connected with the discharge end of the pump. A heavy duty pipe is connected with the discharge end of the hose, and may be formed at its discharge end to shape the filling to a desired size.

3,676,037

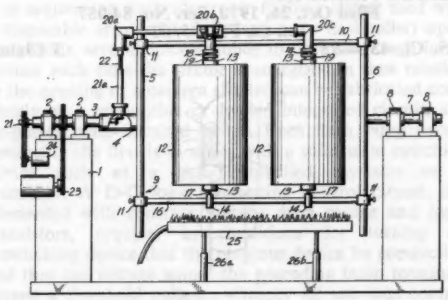
APPARATUS FOR MOLDING HOLLOW PLASTIC ARTICLES

Stewart Pivar, 1 Lynn Drive, Muttontown, N.Y.

Continuation of abandoned application Ser. No. 724,803, Apr. 29, 1968. This application Jan. 4, 1971, Ser. No. 103,893

Int. Cl. B29c *5/04*

U.S. Cl. 425—435 6 Claims



Apparatus for molding hollow plastic articles in which a mold is simultaneously rotated about two mutually perpendicular axes, a source of heat being located at a position generally radially displaced relative to a circle described by the mold. The mold is supported in a frame which is of adjustable size, there being provided a telescopic drive for rotating the mold and which is extensible to accommodate adjustment in the frame.

3,676,038

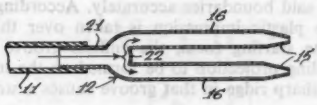
APPARATUS FOR PRODUCING YARN

John F. Orzechowski, Orange, and Thomas W. Haley, Shelton, Conn., assignors to Raybestos-Manhattan, Inc., Bridgeport, Conn.

Filed June 26, 1970, Ser. No. 50,237

Int. Cl. B29f *3/04*

U.S. Cl. 425—464 4 Claims



An extrusion nozzle for asbestos dispersions comprises a single conduit feeding into a plurality of secondary conduits having outlet orifices. A concave or U-bent deflector is provided at the juncture of adjacent secondary conduits and faces the flow path of the dispersion in order to minimize formation of clots and undesirable fiber accumulation between secondary conduits.

3,676,039

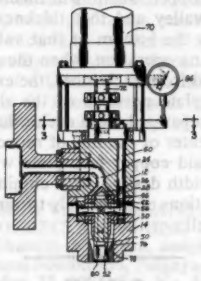
VARIABLE ORIFICE EXTRUSION HEAD

Calvin Hulstein, Wapping, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 5, 1970, Ser. No. 61,381

Int. Cl. B29d *23/04*

U.S. Cl. 425—466 6 Claims



A variable orifice extrusion head for extruding thermoplastic tubular products of varying wall thicknesses. The head has a spider member within the outer body which includes a conically shaped nose portion positioned in the flow passage for dispersing the thermoplastic outwardly. A relatively short mandrel slidably mounted within the spider member below the nose portion has a tip which cooperates with the outlet in the body to define the extrusion orifice. Means operable in a direction parallel to the mandrel are provided for axially moving the mandrel to provide variable orifice capability.

3,676,040

APPARATUS FOR PRODUCING TRIMMED PRINTING FACE PLATES

Paul W. KcKinney, Louisville, Ky., assignor to The Fawcett Printing Corporation, Louisville, Ky.

Filed Sept. 14, 1970, Ser. No. 71,846

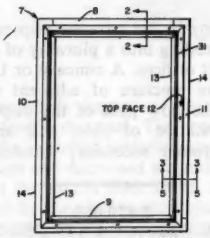
Int. Cl. B29c *17/00*

U.S. Cl. 425—470 3 Claims

In preparing a copper face plate of precise length and width for use in producing an electrotype printing plate, a copper shell of greater length and width is electrolytically deposited upon a molded plastic impression of the pattern face of the original or starting form (i.e. the typeform, containing a positive pattern of the subject matter to be printed, and the adjacent front face of the original

mold frame, which encircles the type-form). In the preferred embodiment of the invention, the front face of my mold frame is provided with an endless groove which also encircles the type-form and which is more or less centered on a "boundary" path accurately reproducing said precise length and width boundaries of the copper face plate.

This endless groove is cross-sectionally contoured to form a pair of narrow valleys separated by a sharp ridge, which is precisely located along said boundary path to reproduce said boundaries accurately. Accordingly, when a negative plastic impression is taken over the pattern face of the starting form, the endless groove causes a corresponding projection to be formed on the impression while the sharp ridge in that groove causes a steep valley



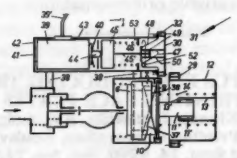
to be formed in that projection. Now, when the plastic impression is conductively coated and electroplated, the thickness of the copper "shell" will inherently be reduced along that deep valley and that thickness reduction will center sharply on the bottom of that valley. As a result, during the stripping operation, when the plastic sheet and shell are separated from each other, the excess margin and the copper face plate portions of the shell can be contemporaneously separated from each other by tearing the shell along the center of the line of reduced thickness. As a consequence, said copper face plate will have the precise length and width desired. This eliminates the normally requisite operations of separately trimming each margin of the copper shell.

3,676,041

GAS BURNER CONTROL APPARATUS FOR OPERATING A PIEZOELECTRIC IGNITION SYSTEM IN CONJUNCTION WITH THE GAS VALVES

Gunter Mobus, Wermelskirchen, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany

Filed Sept. 16, 1970, Ser. No. 72,638
Claims priority, application Austria, Sept. 26, 1969, A 9,151/69
Int. Cl. F23q *9/08*
U.S. Cl. 431—47 **11 Claims**



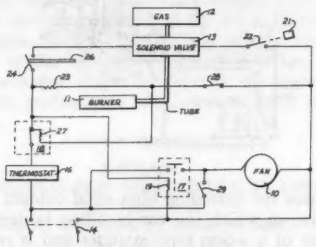
A valve housing includes a pilot valve and a main valve movable along a common axis to open and close the valves. An operating mechanism for the valves includes a cam support and a cam post contacting a cam on one side of the support. A handle is operatively connected to the support so that it can be rotated to a position at which the pilot valve is open. The burning of the pilot valve causes a latch to hold the support in the rotated position. Reverse rotation of the post, cams the rotationally latched support so as to open the main valve. A handle is connected to rotate the post and also a ring gear. Axial displacement of the handle axially moves the gear to a position at which it engages a gear on a piezoelectric lighter, whereupon rotation of the two gears actuates the lighter.

3,676,042

HEATER IGNITION SYSTEM

Keith Osborne, Fort Lee, N.J., assignor to Southern California Gas Co., Los Angeles, Calif.

Filed June 25, 1970, Ser. No. 49,872
Int. Cl. F23n *1/02*
U.S. Cl. 431—66 **5 Claims**



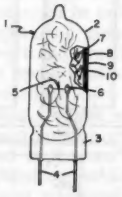
A simple ignition system for a space heater or the like is provided wherein gas or similar fuel flow is controlled by a solenoid valve. A heat sensitive switch and an air flow sensitive switch are serially connected to the solenoid valve for preventing gas flow in the absence of ignition or air flow, respectively. An electric glow igniter adjacent the heat sensitive switch initiates combustion and is disconnected after ignition for prolonged life. If desired, a time delay for disabling the heater in the absence of ignition can be employed if, for example, the heater is a nonsealed system.

3,676,043

PHOTOFLASH LAMP HAVING LAMINATED GLASS ENVELOPE

John Wallace Anderson, Danvers, and Frederick Ardel Loughridge, Manchester, Mass., assignors to Sylvania Electric Products Inc.

Filed Oct. 26, 1970, Ser. No. 84,057
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **3 Claims**



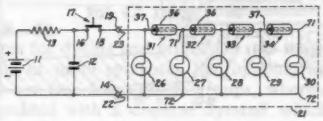
A laminated glass envelope of a photoflash lamp comprises three separate layers of glass fused to one another to provide an integral envelope. The center layer of glass has a higher coefficient of thermal expansion than the inner and outer layers with the result that the center layer is in tension and the other layers are under compressive stress. The envelope as a result is stronger than conventional single layer glass envelopes and more resistant to internal pressure when the lamp is flashed.

3,676,044

CIRCUIT UTILIZING MAGNETIZED CORES FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Feb. 16, 1971, Ser. No. 115,469
Int. Cl. F21k 5/02
U.S. Cl. 431—95 12 Claims



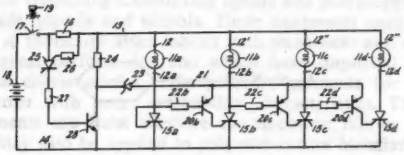
A plurality of photoflash lamps are connected electrically to a source of firing pulses through a succession of magnetized cores. The cores are magnetized in a polarity so as to resist passage of the firing pulse. Each firing pulse has sufficient energy to overcome the magnetization effect of one core, whereby a different individual lamp is flashed upon the occurrence of each firing pulse.

3,676,045

SEQUENCING STATIC ELECTRONIC FLASHING CIRCUITS FOR PHOTOFLASH LAMP ARRAY

Donald L. Watrous, Liverpool, N.Y., and Paul T. Coté, Cleveland Heights, Ohio, assignors to General Electric Company

Continuation of abandoned application Ser. No. 820,186, Apr. 29, 1969. This application Jan. 25, 1971, Ser. No. 109,576
Int. Cl. F21k 5/02
U.S. Cl. 431—95 33 Claims



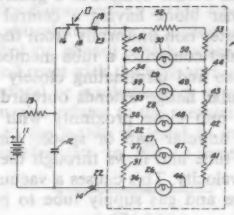
A sequencing static electronic flashing circuit used with a disposable array of *n* flash lamps (or flashbulbs) operates within several microseconds to flash one lamp in sequence each time the circuit is energized in time relation to the opening of a camera shutter, can be fabricated completely as a monolithic or hybrid integrated circuit, and by-passes open-circuited lamps. Each flash lamp except optionally the first is in series with a solid state switching device such as a gate controlled thyristor or a transistor. A D-C logic sequencing control circuit, implemented with constant voltage drop means and logic transistors, requires as conditions for turning on a switching device that the previous device be conducting and that the voltage across the preceding lamp terminals exceed a threshold voltage, whereby all previous control circuit paths are conducing. Current or light sensing operates a lockout to de-energize the sequencing control circuit to prevent multiple flashes, and in another embodiment the sequencing is initiated by an external pulse and the circuit is energized only during the duration of the pulse. The start of sequencing after energizing the circuit and de-energization thereof independent of the shutter actuated switch can be controlled either by modifications within the sequencing flashing circuit or by external timer circuits that operate a static switch.

3,676,046

RESISTOR CIRCUIT ASSEMBLY FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

Edward L. Laskowski, Parma, Ohio, assignor to General Electric Company

Filed Aug. 3, 1970, Ser. No. 60,298
Int. Cl. F21k 5/02; H05b 37/00
U.S. Cl. 431—95 12 Claims



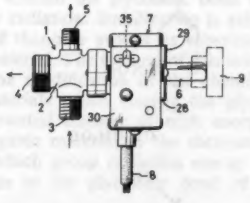
A resistor circuit, and assembly, for causing sequential flashing of a plurality of photoflash lamps from pulses of electrical energy. A first series of resistors are successively connected between first leads of the flash lamps, and a second series of resistors are successively connected between second leads of the flash lamps. The source of firing pulses is connected to a lead of a first lamp at one end of the circuit, and to the leads of the last lamp at the other end of the circuit via a resistance network. The assembly consists of an elongated U-shaped strip of resistance material, with the lamps positioned therealong and the leads of each lamp connected to adjacent points on the respective legs of the U-shaped strip. A second similar assembly of a U-shaped resistance strip and lamps connected thereto, is interposed with the first such assembly to provide a double array of flash lamps in a single unit.

3,676,047

GAS CONTROL VALVE MEANS HAVING A PIEZOELECTRIC FIRING UNIT

Shinichi Soma, Okazaki-shi, Japan, assignor to Kabushiki Kaisha Rinnai Seisakusho, Nagoya-shi, Japan

Filed Mar. 31, 1971, Ser. No. 129,842
Claims priority, application Japan, Aug. 10, 1970, 45/69,206
Int. Cl. F23q 3/00
U.S. Cl. 431—255 11 Claims



A gas control valve apparatus comprises a valve unit operated by a rotatable shaft to first open a pilot gas passage after which rotation is automatically stopped and at this time, a cocked hammer is released to strike a piezoelectric firing unit and effect a spark discharge to ignite the pilot burner. The stop of the rotation of the shaft is released automatically by removal of the actuating torque on the shaft whereby the shaft can be further rotated to bring the valve unit to a position in which a gas passage for the main burner is fully opened.

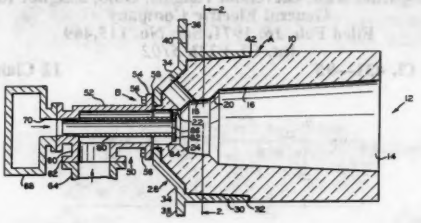
3,676,048

EXCESS AIR BURNER

John Sellors, Jr., and Howard E. Shular, Cleveland, Ohio, assignors to Pyronics Inc., Cleveland, Ohio

Filed Mar. 13, 1970, Ser. No. 19,305
Int. Cl. F23d *15/02*
U.S. Cl. 431—353 1 Claim

A gas burner particularly adapted for operation with exceptionally large quantities of excess air. The preferred embodiment of the burner comprises a generally cylindrical, ceramic burner block having a central bore which increases in diameter non-uniformly from the inlet to the outlet. The gas inlet comprises a tube member positioned axially of the bore and terminating closely adjacent the inlet end. A circular flange extends outwardly about the end of the tube into close proximity with the bore to define a narrow annular gap or space. Air is supplied annularly of the tube and flows through the narrow gap with substantial velocity. This causes a vacuum across the face of the flange and gas supply tube to produce good mixing and efficient combustion. By properly relating the size of the flange, the annular opening and the bore, the



burner gives excellent combustion characteristics throughout substantial variations in gas-air ratios.

CHEMICAL

3,676,049

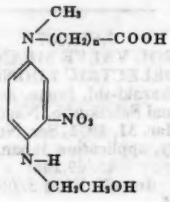
DYEING HAIR WITH DERIVATIVES OF NITRO-PARAPHENYLENEDIAMINE

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, France, assignors to L'Oreal, Paris, France

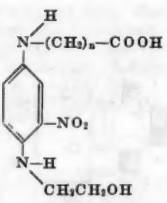
No Drawing. Continuation-in-part of application Ser. No. 544,079, Apr. 21, 1966. This application July 20, 1970, Ser. No. 56,756
Claims priority, application France, Apr. 23, 1965, 14,482
Int. Cl. A61k *7/12*
U.S. Cl. 8—10 6 Claims

A hair dye composition comprising a solution having a pH of 3 to 10 containing an effective amount of a hair dye selected from the group having the formula:

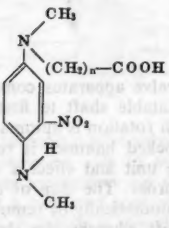
(I)



(II)



(III)



in which n is 1 to 4 and the method of dyeing hair with this composition.

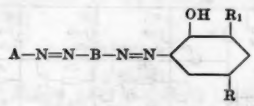
3,676,050

AQUEOUS DYEING OF ACID-DYEABLE POLYAMIDE FIBERS USING YELLOW-TO-ORANGE DISAZO DYES

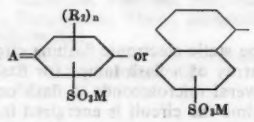
Daniel S. James, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,783
Int. Cl. C09b *31/04*
U.S. Cl. 8—41 B 11 Claims

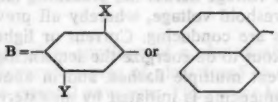
In an aqueous process for dyeing textile materials comprised of polyamides, particularly deep-dyeable polyamides and polyamide styling yarns and fibers, at a pH of 3–7 and at a temperature up to the boil, in the presence of dyes and dyeing assistants, the improvement of using yellow-to-orange disazo dyes of the structure



wherein



the SO_3M group in the latter structure being substituted in either aromatic ring of the naphthalene nucleus;
R_2=methyl, methoxy, $NHCOCH_3$, Cl or Br;
n=0, 1 or 2;
M=H, alkali metal or ammonium cation;



X and Y=H, C_{1-2} alkyl or C_{1-2} alkoxy;
R=C_{1-5} alkyl, —$NHCOC_{1-4}$ alkyl, or, when X (or both X and Y) is a substituent other than H, Cl or Br; and
R_1=H or C_{1-5} alkyl.

3,676,051

PROCESS FOR DYEING AND PRINTING TEXTILE MATERIALS MADE FROM SYNTHETIC ORGANIC FIBRES

Purushottam Janardan Kangle, Goregaon-Bombay, India, and Visvanathan Ramanathan, Basel, and Rudolf Argy, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed June 15, 1970, Ser. No. 46,452
Claims priority, application Switzerland, June 16, 1969, 9,158/69
Int. Cl. D06p *5/00*
U.S. Cl. 8—65 6 Claims

A process for dyeing and printing textile materials comprising one or more synthetic, hydrophobic linear polymers that are free from nitrile groups, wherein the material is padded with a disperse dyestuff which contains amino groups but which does not contain acidic groups or quaternary ammonium groups, dried, printed with a printing paste containing a compound having an acid reaction at least when subjected to heat, the material is subjected to fixation by the application of dry heat and subsequently the salt of the dyestuff containing amino groups is washed out of the printed areas.

3,676,052

POLYPROPYLENE GLYCOLS AND SUBSTITUTED POLYPROPYLENE GLYCOLS ARE USED IN CONJUNCTION WITH CROSSLINKING AGENTS TO PRODUCE DURABLE PRESS FABRICS WITH IMPROVED SOIL RELEASE PERFORMANCE

Robert J. Harper, Jr., Metairie, Joseph S. Bruno, Chalmette, and Gloria A. Gautreaux, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,703
Int. Cl. D06m *15/10, 15/54, 15/58*
U.S. Cl. 8—115.6 4 Claims

This invention relates to fabrics treated with one bath systems containing crosslinking agents and polypropylene alcohols, glycols and polyols. These treatments once applied to fabrics produce fabrics with wash-wear and durable press performance and which have improved soil release characteristics. This provides garments for the consumer with better washability characteristics. These treatments are most effective on all-cotton fabrics but they may also be applied to polyester-cotton blends. The system utilized to achieve soil-release is a one bath system readily applicable to either precured or postcured fabrics. These treatments have been evaluated using soiling tests followed by laundering and measuring reflectance values.

3,676,053

METHOD OF MODIFYING FIBROUS MATERIALS

Yasuhiko Miyake, Nobara, and Eifu Takayanagi, Shigeo Narita, Masaaki Shin, Toshio Hayashi, and Koichi Sakurai, Kanakawa-Prefecture, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Sept. 4, 1969, Ser. No. 855,411
Claims priority, application Japan, Sept. 26, 1968, 43/69,106; Jan. 14, 1969, 44/2,333; Jan. 31, 1969, 44/6,665; Mar. 14, 1969, 44/18,850; Mar. 26, 1969, 44/22,309
Int. Cl. D06m *13/14, 13/18, 13/40*
U.S. Cl. 8—116 10 Claims

The present invention is a method of modifying cellulosic fibrous materials characterized by impregnating a cellulosic fibrous material with a modifier containing tetraoxane and/or pentaoxane and heat-treating it at an elevated temperature preferably above at least about 100° C. in the presence of an acid substance. Also covered are novel modifier compositions containing tetraoxane and/or pentaoxane and an acid catalyst.

3,676,054

PROCESS FOR FLAMEPROOFING CELLULOSIC TEXTILE FABRICS AND PRODUCT OBTAINED THEREBY

Richard H. Symm, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,975
Int. Cl. C09k *3/28;* D06m *13/44, 13/48*
U.S. Cl. 8—116.2 6 Claims

The present invention relates to a composition of matter, suitable for flameproofing textile fabrics, consisting of an aziridinyl phosphine oxide or sulfide and a halogen substituted alcohol or phenol which, when heated, will copolymerize and react with the hydroxyl or nitrogen hydrogen of the natural or synthetic fiber of a textile material. The invention also relates to the method for applying the composition to the textile material to impart said flameproofing characteristics to the so-treated textile material.

3,676,055

PRESERVING CELLULOSIC MATERIALS THROUGH TREATMENT WITH ALKYLENE OXIDES

Richard Daniel Smith, 1369 E. Hyde Park Blvd., Chicago, Ill. 60615

No Drawing. Continuation-in-part of application Ser. No. 661,190, Aug. 15, 1968. This application Aug. 31, 1970, Ser. No. 68,472
Int. Cl. D06m *11/12, 13/10*
U.S. Cl. 8—120 12 Claims

An improvement in nonaqueous processes for deacidification and preservation of cellulosic materials is disclosed, comprising reacting the deacidified cellulosic material with alkylene oxide such as ethylene oxide. Particularly effective is contacting cellulosic material, such as books, which are deacidified by a nonaqueous deacidification process, with ethylene oxide for 15 minutes or less at ambient temperature and atmospheric pressure, and equivalent reaction conditions at other pressures and temperatures.

3,676,056

HIGH ENERGY RADIATION STABILIZATION OF CELLULOSE OBTAINED BY ESTERIFYING WITH THENOYL CHLORIDE

Jett C. Arthur, Jr., Metairie, La., and Sujan Singh, Varanasi Uttar Pradesh, India, assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,138
Int. Cl. D06m *13/20*
U.S. Cl. 8—120 9 Claims

This invention relates to a method for stabilizing organic materials that contain the glycosidic bond to the effects of high energy radiation. Stabilization is achieved by the introduction of thenoate groups as substituents into the said organic material. The method of this invention has as its objective the modification of the chemical structure of organic materials which contain the glycosidic bond to allow preferential transfer of high energy from one part of the organic material to the thenoate substituent group within which group radiation energy is dissipated without damage to the glycosidic bond of the organic material.

3,676,057

TEXTILE PROCESS

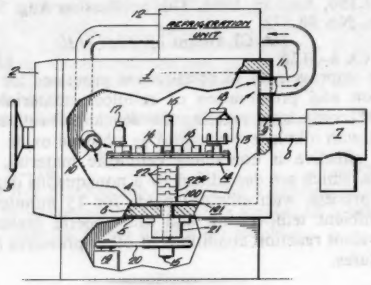
Thomas Desmond Brown, Keighley, England, assignor to I.W.S. Nominee Company Limited, London, England

No Drawing. Filed Feb. 5, 1969, Ser. No. 796,916
Claims priority, application Great Britain, Feb. 9, 1968, 6,621/68
Int. Cl. D06m *3/10, 13/00*
U.S. Cl. 8—128 10 Claims

Dimension and shape stabilized wool garments are produced by applying resins or resin-forming materials in an

organic solvent to wool fabric or garments which have previously been set by steam or with the help of chemical setting agents in a desired configuration, which may be flat or pleated. The effect of the combined setting and resin treatment is to give a permanent set which is greater than that possible by either a setting or a resin treatment alone, and the process affords a way of achieving a finish on a wool garment which is machine washable. The setting treatment can be applied either to a wool fabric, which may be of pure wool or of wool blended with other fibres, or to a partially or wholly make-up garment. The resin treatment can be conveniently carried out in dry cleaning machinery.

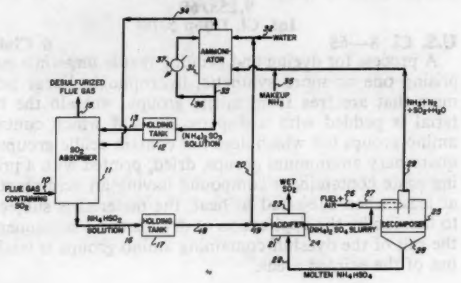
3,676,058
MICROWAVE TREATING APPARATUS AND METHOD
Oscar S. Gray, Fort Lauderdale, Fla., assignor to Gray Industries, Inc., Fort Lauderdale, Fla.
Continuation-in-part of application Ser. No. 817,181, Apr. 17, 1969. This application May 25, 1970, Ser. No. 40,327
Int. Cl. A61l *3/00*; A23l *3/08*; B65b *55/02*
U.S. Cl. 21—54 R **17 Claims**



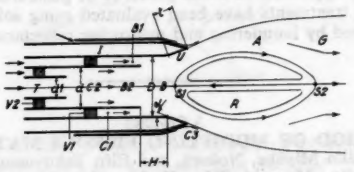
An apparatus for treating articles with microwave energy involving a chamber; means for admitting microwave energy into the chamber; means for supporting articles to be treated by said microwave energy comprising a main rotatable turntable and, mounted on said main turntable, at least one minor rotatable turntable small relative to said main turntable and adapted to rotate individually as the main turntable rotates so that said minor turntable rotates while at the same time passing in an arc, defined by the rotation of the said main turntable, toward, past and away from said site where said microwave energy is admitted to said chamber. There is also provided a method for treating an article with microwave energy wherein the article, while being subjected to microwave energy, is rotated in a plurality of modes of different magnitude.

3,676,059
SULFATE CONTROL IN AMMONIA FLUE GAS DESULFURIZATION
Albert B. Welty, Jr., 225 Watchung Fork, Westfield, N.J. 07090
Filed June 1, 1970, Ser. No. 41,940
Int. Cl. C01b *17/60*; C01c *1/24*
U.S. Cl. 23—2 **5 Claims**

Buildup of sulfate ions in a flue gas desulfurization system employing an aqueous ammoniacal absorbent is prevented by reducing a portion of the sulfate to sulfur dioxide. Sulfur dioxide is removed from flue gas by absorption in an aqueous solution of ammonium sulfite or ammonia. Some oxidation of tetravalent sulfur to the hexavalent state takes place. At least a portion of the absorber effluent solution is regenerated by acidification with ammonium bisulfate to liberate sulfur dioxide and to form an aqueous ammonium sulfate-ammonium bisulfate slurry. This slurry is introduced into a decomposition zone where a major portion of the salt content is decomposed into ammonium bisulfate and ammonia, and a minor portion into a gas mixture comprising ammonia, nitrogen, sulfur dioxide and steam. The ammonium bisulfate thus produced furnishes the bisulfate used for liberation of sulfur dioxide. The gas mixture formed in decomposition is used to ammoniate a second portion of the absorber effluent solution, and thereby produce fresh absorbent solution.



3,676,060
APPARATUS FOR THE COMBUSTION OF TITANIUM TETRACHLORIDE WITH OXYGEN FOR THE PRODUCTION OF TITANIUM DIOXIDE PIGMENT
Gianfranco Bedetti, Milan, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy
Original application Aug. 11, 1967, Ser. No. 660,035, now Patent No. 3,552,920, dated Jan. 5, 1971. Divided and this application Feb. 2, 1970, Ser. No. 12,490
Claims priority, application Italy, Aug. 16, 1966, 19,039/66
Int. Cl. B05b *7/10*; C01g *23/04*; B01j *1/00*
U.S. Cl. 23—277 R **1 Claim**



Apparatus for the combustion of titanium tetrachloride with oxygen to titanium dioxide into a reaction chamber, the apparatus comprises a tubular cylindrical vortex chamber with an outlet end equipped with a flare towards the reaction chamber; a feeding device for the vortex chamber consisting of three ducts coaxial one with each other and with the vortex chamber, the inner one of said ducts feeding one of two auxiliary reactants has no swirl devices, the middle one, feeding a second auxiliary reactant is equipped with a swirl device. The coaxial flare ending in the reaction chamber diverges in its last part from the tubular body of an angle comprised between 10° and 45°. The ratio of the length of the conical flare versus the diameter of the tubular body is between 0.15 and 1. The ratio between the length of the

vortex chamber and the diameter of said chamber is between 0 and 3. The ratio of the length of the portion of the duct where the mixing of the auxiliary reacting substances occurs, and the diameter of the duct is between 2 and 10.

3,676,061

MANUFACTURING METHOD FOR HIGH PURITY SYNTHETIC CRYOLITE FROM CRUDE WET PROCESS PHOSPHORIC ACID

Koji Taga and Masahiko Noguchi, Kasaoka, Japan, assignors to Konoshima Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,149
Claims priority, application Japan, Oct. 1, 1969, 44/78,712
Int. Cl. C01b *9/08*
U.S. Cl. 23—88 8 Claims

High purity synthetic cryolite is prepared from wet process phosphoric acid solution through treatment of the solution with an alkali salt so as to form crystalline alkali fluosilicate, heating the alkali fluosilicate thus obtained with concentrated sulfuric acid and at least one alkali salt selected from the group consisting of alkali chloride and alkali nitrate and absorbing the gas thereby evolved so as to provide a solution of hydrofluosilicic acid and either hydrochloric or nitric acid, and reacting this solution of hydrofluosilicic acid with sodium aluminate solution.

3,676,062

MANUFACTURING METHOD FOR PURE SYNTHETIC CRYOLITE

Koji Taga and Masahiko Noguchi, Kasaoka, Japan, assignors to Konoshima Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed Oct. 7, 1970, Ser. No. 78,991
Claims priority, application Japan, Oct. 11, 1969, 44/81,264
Int. Cl. C01f *7/54*
U.S. Cl. 23—88 2 Claims

Synthetic cryolite for use in the refining of aluminum is prepared having less than 1% SiO_2 content. The synthesis is carried out with 5–20% of one or more mineral acids at pH 3.5–4.5.

3,676,063

PROCESS FOR PREPARING SYNTHETIC CRYSTALLINE ZEOLITIC SODIUM ALUMINOSILICATE

Arpad Elo, Jr., Chicago, and Frank R. Broersma, Oak Forest, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,389
Int. Cl. C01b *33/28*
U.S. Cl. 23—113 4 Claims

Crystalline zeolitic sodium aluminosilicates are prepared by reacting sources of silica, alumina, and sodium oxide in an aqueous medium in the presence of gluconate in an amount sufficient to suppress side reactions and enhance the formation of synthetic faujasite.

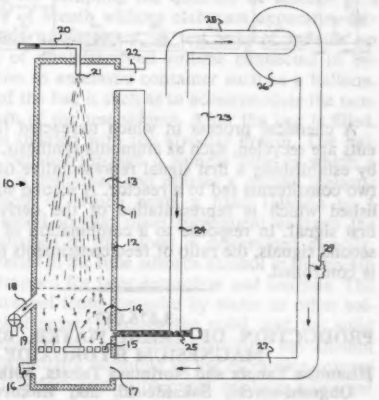
3,676,064

METHODS FOR THE TREATMENT OF SPENT SULFITE PULPING LIQUORS AND THE RECOVERY OF CHEMICAL PULPING VALUES THEREFROM

Philip E. Shick, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 16, 1970, Ser. No. 29,063
Int. Cl. C01d *5/14, 7/00*
U.S. Cl. 23—129 1 Claim

Improved processes for the treatment of spent pulping liquors and the recovery of sulfite values therefrom wherein the disclosure sets forth a first method consisting essentially of the combined process of pyrolyzing and treating in a fluidized bed a spent neutral semi-sulfite liquor in a single apparatus; then, transferring the gaseous product to a separator for removing entrained particles for return to the fluidized bed where the particles are converted to sodium carbonate followed by a removal of the sodium carbonate from the bed for scrubbing gases to absorb sulfur dioxide to produce sodium sulfite, and wherein the process further consists of recirculating the hot gases produced in the combined pyrolyzing fluidized bed treatment after the entrained particles have been separated in the cyclone separator by conveying some of the gases to the fluidized bed and also burning some of the gases in a furnace to produce sulfur dioxide, which is then absorbed in a solution of sodium carbonate from the fluidized bed to produce sodium sulfite. The second process described in the invention relates to pyrolyzing a spent liquor in a pyrolyzing chamber followed by separating the entrained particles in a cyclone separator and conveying said separated particles to a multistage fluidized bed to produce a solid product consisting primarily of sodium carbonate and gaseous products, which gaseous products are conveyed from the fluidized bed to the pyrolyzing chamber for treatment of the incoming spent pulping liquor. The gases produced in the pyrolyzing chamber are conveyed from the cyclone to a recirculating system with some of the said gases being transported back into the pyrolyzing chamber mixed with the gases from combustion of the solid particles entering the fluidized bed from the cyclone, and the remaining gases transported to a recovery boiler for conversion of the sulfur compounds to sulfur dioxide, which is then scrubbed with a solution of sodium carbonate from the fluidized bed reactor, for regeneration of sodium sulfite for preparation of a pulping liquor. In both of these processes, the recirculation of the pyrolytic gases into the pyrolysis chamber aids in maintaining an improved, more effective and economical pyrolysis system.



3,676,065

METHOD OF MANUFACTURING HIGHLY CONCENTRATED NITRIC ACID

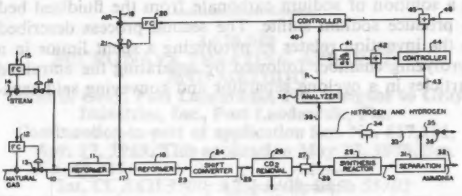
Gerhard Oberste-Berghaus, Berlin, Germany, assignor to Pintsche Bamag Aktiengesellschaft, Berlin, Germany

Continuation of abandoned applications Ser. No. 834,602, June 9, 1969, and Ser. No. 662,985, Aug. 24, 1967. This application Nov. 16, 1970, Ser. No. 91,608
Claims priority, application Germany, Aug. 30, 1966, P 40,298
Int. Cl. C01b *21/44*
U.S. Cl. 23—160 4 Claims

The invention relates to a method of manufacturing highly concentrated nitric acid, wherein dilute nitric acid

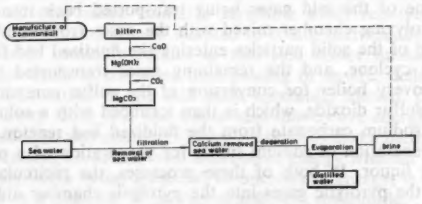
is concentrated beyond the azeotropic point by chemical absorption of nitrogen dioxide, the product so obtained being subjected to a rectification process.

3,676,066
PROCESS CONTROL
Edward N. Pennington, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Sept. 17, 1970, Ser. No. 73,070
Int. Cl. C01c *1/04*
U.S. Cl. 23—198 **8 Claims**



A chemical process in which unreacted feed constituents are recycled, such as ammonia synthesis, is controlled by establishing a first signal representative of the ratio of two constituents fed to a reactor. A second signal is established which is representative of the derivative of the first signal. In response to a combination of the first and second signals, the ratio of feed constituents to the process is controlled.

3,676,067
PRODUCTION OF FRESH WATER, BRINE AND MAGNESIUM HYDROXIDE
Hisanobu Tabata and Norimasa Tabata, both of 968 Kou, Ohgoshi-machi, Sakaide-shi, and Rokuro Nakajima, 1831 Ohyabu-cho, Sakaide-shi, all of Kanagawa-ken, Japan
Filed June 15, 1970, Ser. No. 46,286
Claims priority, application Japan, June 19, 1969, 44/48,416, 44/48,417
Int. Cl. C01b *5/00*; C01d *3/00*; C01f *5/14*
U.S. Cl. 23—204 R **10 Claims**

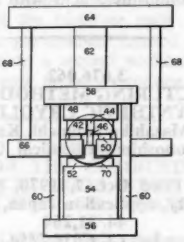


Disclosed is a method for making fresh water and brine from sea water by reacting bittern, obtained, for example, from the extraction of common salt, with calcium oxide to form an aqueous suspension of magnesium hydroxide which is treated with carbon dioxide to form magnesium carbonate. The magnesium carbonate is added to the sea water to precipitate calcium out of the water as calcium carbonate which is filtered off and the remaining solution is concentrated to produce fresh water and brine. Also disclosed is a method for preparing magnesium hydroxide wherein an aqueous magnesium chloride solution is mixed with quicklime in a closed, rotary reaction zone at a temperature of about 50° to 70° C. at a pH of about 8.0 to 8.5.

3,676,068
METHOD FOR SYNTHESIZING DIAMOND
Alexandr Alexandrovich Shulzhenko and Anatoly Fedorovich Getman, Kiev, U.S.S.R., assignors to Ordena Trudovogo Krasnogo Znameni Ukrainsky Nauchno-Issledovatelsky Konstruktorsky, Teknnologichesky Institut Sinteticheskikh Sverkhtverdykh materialov i Instrumenta Gosplana Ukrainskoi SSR, Kiev, U.S.S.R.
No Drawing. Filed May 11, 1971, Ser. No. 142,800
Claims priority, application U.S.S.R., May 18, 1970, 1,436,483
Int. Cl. C01b *31/06*
U.S. Cl. 23—209.1 **3 Claims**

Diamond is synthesized by subjecting carbon-containing material in contact with a compound of mercury or lead, such as mercury oxide or lead oxide, to a temperature of at least 2000° C. and a pressure corresponding to a selected temperature within the diamond stability region.

3,676,069
METHOD FOR MANUFACTURING DIAMONDS IN A HYDROGEN FREE ENVIRONMENT
George C. Kennedy, Los Angeles, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Aug. 13, 1970, Ser. No. 63,355
Int. Cl. C01b *31/06*
U.S. Cl. 23—209.1 **6 Claims**



A method of manufacturing diamond from graphite in a hydrogen free environment is disclosed in which a reaction vessel is first formed from an anhydrogenous material. A charge of graphite and a carbon solvent is placed in the reaction vessel and the reaction vessel is placed in the reaction chamber. A plunger is placed in the reaction chamber to generate high pressures therein, and the relatively moving surfaces between the reaction chamber and the plunger are lubricated with an anhydrogenous lubricant. The temperature and pressure in the reaction chamber are then raised until the conditions in the reaction chamber are above the diamond-graphite equilibrium line of the carbon phase diagram and these pressure and temperature conditions are maintained for a predetermined time period until at least a portion of the graphite in the charge is converted to diamond.

3,676,070
MANUFACTURE OF CARBON BLACK
John W. Vanderveen, Paul J. Cheng, K. Louis Mills, Jr., Charles R. Venable, Jr., and Paul H. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Jan. 29, 1971, Ser. No. 111,082
Int. Cl. C09c *1/48*
U.S. Cl. 23—209.4 **9 Claims**

In a process for producing carbon black in which a hydrocarbon feed is pyrolytically decomposed in a carbon black reactor an oxide of aluminum or zirconium is introduced into the carbon black reactor in an amount sufficient to prevent the decomposition of the refractory lining as caused by the presence of barium, calcium, and iron but insufficient to effect the structure of the carbon black product.

3,676,071

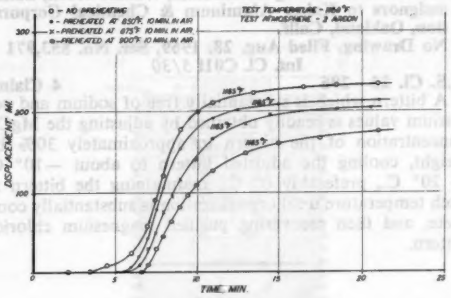
PROCESS FOR CONTROLLED PRODUCTION OF HYDROGEN GAS BY THE CATALYZED AND CONTROLLED DECOMPOSITION OF ZIRCONIUM HYDRIDE AND TITANIUM HYDRIDE

Sidney E. Speed, Stonington, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of application Ser. No. 866,776, Oct. 15, 1969. This application Apr. 22, 1970, Ser. No. 30,886

Int. Cl. C01b 1/02; C01g 25/02

U.S. Cl. 23—212 R 13 Claims


O – NO PREHEATING
• – PREHEATED AT 850°F. 10 MIN. IN AIR
X – PREHEATED AT 875°F. 10 MIN. IN AIR
o – PREHEATED AT 900°F. 10 MIN. IN AIR
TEST TEMPERATURE – 1150°F.
TEST ATMOSPHERE – 2 ARGON
DISPLACEMENT, ML
TIME, MIN.

A process for producing a controlled amount of hydrogen gas by for catalyzing and controlling the solid state decomposition of a material which releases a gas at elevated temperatures comprising mixing and compacting a discrete particulate material containing a major proportion of aluminum with zirconium hydride or titanium hydride. heating the resultant compact at a temperature of 850° to 900° F. for at least five minutes and then heating said compact at a temperature greater than the decomposition temperature of said decomposable material.

3,676,072

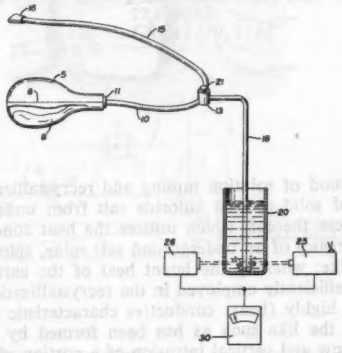
BREATH TEST FOR MARIJUANA SMOKERS AND APPARATUS THEREFOR

Alan F. Krivis, Akron, Ohio, assignor to Portage Research & Development Corporation, Kent, Ohio

Filed Sept. 10, 1969, Ser. No. 856,541

Int. Cl. G01n 21/24, 33/16, 31/22

U.S. Cl. 23—232 R 7 Claims



A test for determining whether one has recently smoked marijuana. The test involves treating the breath of the person with a compound known to react with decomposition products of marijuana to produce a color reaction. Apparatus is included.

3,676,073

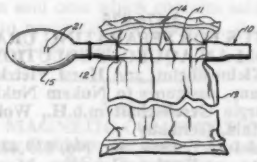
ALVEOLAR BREATH VOLUMETRIC ANALYSIS FOR ALCOHOL

Manley J. Luckey, 7252 Osbun Road, San Bernardino, Calif. 92404

Filed May 6, 1970, Ser. No. 35,139

Int. Cl. G01n 33/16

U.S. Cl. 23—232 R 7 Claims



A breath sampling kit and method for sampling breath are described for sampling the quantity of alcohol in a fixed quantity of breath without elaborate apparatus. According to this arrangement, a test subject inflates an inelastic bag of predetermined volume connected in bypassing relation to an elastic container such as a balloon. The volume of the bag is such as to accommodate the nonalveolar breath of the test subject. After the bag is filled, the balloon is inflated with the alveolar breath. The balloon is then deflated through a sample tube in which a solid material is contained and inflates a second inelastic bag, the volume of which bears a fixed relation to 1 milliliter of blood so that upon subsequent analysis the quantity of alcohol in the blood is determined directly. The solid material in the tube adsorbs alcohol in the breath and keeps it trapped for later extraction and analysis. The alcohol is extracted from the solid by water or other solvent for alcohol passed through the solid, and the solid material is selected for reversibly adsorbing the alcohol and being substantially insoluble in the extracting solvent so as not to interfere with subsequent analysis, silica gel being particularly preferred.

3,676,074

APPARATUS FOR TREATING ORGANIC WASTE

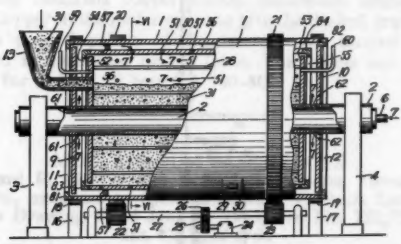
Daigoro Shibayama, Takasaki, and Teruo Mashimo, Annaka, Japan, assignors to Yamato Setubi Koji Kabushiki Kaisha, Maebashi-shi, Japan

Filed May 19, 1970, Ser. No. 38,740

Claims priority, application Japan, June 30, 1969, 44/51,663

Int. Cl. B01j 2/12; C05f 3/06

U.S. Cl. 23—259.1 5 Claims



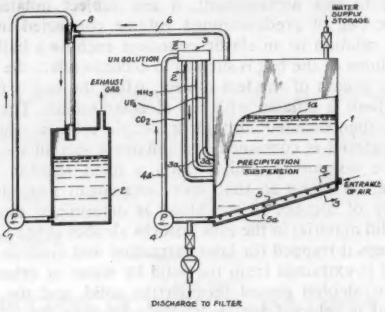
An apparatus for disposal of organic waste such as the excrement of birds and animals and sea food wastes comprising a fixed air pipe having a specific diameter and a cylinder rotatable around the axis of the fixed air pipe, said air pipe having a plurality of air blow-off elements to feed air into the cylinder, or said cylinder being combined with a coaxial inner cylinder rotatable also around

the axis of said air pipe, said inner cylinder having a plurality of air jet holes to supply air into the inner cylinder, whereby such organic wastes as excrements and sea food wastes fed into the rotating cylindrical structure are fermented and decomposed by the action of aerobic bacteria and subjected to drying and solidification before being taken out of the cylindrical tank.

3,676,075
APPARATUS FOR SEPARATING URANIUM FROM AN AQUEOUS SOLUTION

Fritz Ploger, Kleinostheim, and Horst Vietzke, Grossauheim, Germany, assignors to Nukem Nuklear-Chemie und Metallurgie Gesellschaft m.b.H., Wolfgang, near Hanau am Main, Germany

Filed July 7, 1969, Ser. No. 839,435
Claims priority, application Germany, May 14, 1969, P 19 24 594.4
Int. Cl. B01j *1/00*; C01g *43/00*
U.S. Cl. 23—285 **5 Claims**



A uranium solution is cycled from a vessel through mixing nozzles mounted in precipitating tubes and back into the vessel, and the gases produced in the vessel are passed into a washing tank.

3,676,076
DISPOSABLE CONTAINER

Dennis R. Grady, Yonkers, N.Y., assignor to Gradko Glass Laboratories, Inc., Yonkers, N.Y.

Filed Sept. 24, 1970, Ser. No. 74,959
Int. Cl. B01l *3/00*; B65d *1/04*; G01n *1/14*
U.S. Cl. 23—292 **6 Claims**

A disposable container, particularly for use in laboratory and medical uses, includes a plastic resin container having flexible walls. A neck portion of the container has an opening which is closed by a thin membrane, the membrane being adapted to be pierced by a bushing lodged, with a friction fit, in the neck. The bushing has a pointed edge directed toward the membrane and an outwardly extending flange portion, which controls the movement of the bushing.

3,676,077
PURIFICATION OF MAGNESIUM CHLORIDE SOLUTIONS

Norman Bell and Hung-Kei H. Lam, Walnut Creek, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

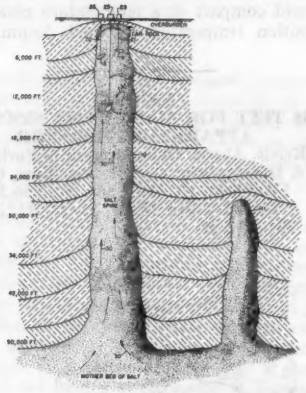
No Drawing. Filed Aug. 28, 1969, Ser. No. 853,971
Int. Cl. C01f *5/30*
U.S. Cl. 23—296 **4 Claims**

A bittern which is substantially free of sodium and potassium values is readily obtained by adjusting the $MgCl_2$ concentration of the bittern to approximately 30% by weight, cooling the adjusted bittern to about —10° C. to 20° C., preferably 0° C., maintaining the bittern at such temperature until crystallization is substantially complete, and then recovering purified magnesium chloride bittern.

3,676,078
SALT SOLUTION MINING AND GEOTHERMAL HEAT UTILIZATION SYSTEM

Charles H. Jacoby, Dalton, Pa., assignor to International Salt Company, Clarks Summit, Pa.

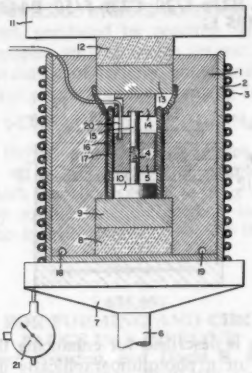
Filed Mar. 19, 1970, Ser. No. 21,051
Int. Cl. B01d *1/00, 11/02*; C01d *3/08*
U.S. Cl. 23—299 **4 Claims**



A method of solution mining and recrystallization recovery of solid sodium chloride salt from underground occurrences thereof, which utilizes the heat conductivity characteristics of an underground salt spine, spire, dome, or the like; whereby the latent heat of the earth's core may be efficiently employed in the recrystallization process. The highly (heat) conductive characteristic of a salt spire or the like such as has been formed by geologic plastic flow and vertical intrusion of a portion of a deep-seated "mother" bed of salt through the relatively heat-insulative overlying rock strata, is employed to draw heat from a high temperature geologic structure which is so deep-seated as to be economically inaccessible to modern drilling equipment. This heat energy is drawn into a "heat well" which is developed at an underground level which

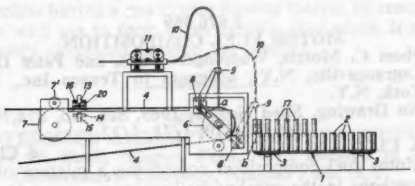
is readily within reach of modern earth bore drilling techniques; the heat energy flowing into the "heat well" being thereupon transmitted and utilized in the salt recrystallization process facility at or near the earth's surface.

3,676,079
PRESSURE CALCINTERING
Peter E. D. Morgan, Ithaca, N.Y., assignor to Research Corporation, New York, N.Y.
Filed Mar. 28, 1966, Ser. No. 538,036
Int. Cl. C01f *1/00, 15/00*; C22c *1/04*
U.S. Cl. 23—345 **10 Claims**



Finely-grained ceramic magnesium, aluminum or thorium oxide having an actual density approaching the theoretical density is prepared by heating the corresponding substantially pure hydroxide maintained at a pressure above 1500 p.s.i. to a temperature above its decomposition temperature while permitting water vapor to escape as it is formed.

3,676,080
DEVICE FOR AUTOMATICALLY ANALYZING LIQUIDS
Roland Richterich, Bern, Switzerland, assignor to Hoffmann-La Roche Inc., New York, N.Y.
Filed Dec. 5, 1968, Ser. No. 781,317
Claims priority, application Switzerland, Dec. 15, 1967, 17,638/67
Int. Cl. G01n *1/10, 1/18*
U.S. Cl. 23—253 R **1 Claim**

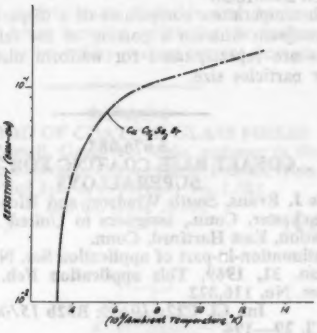


Each group of reaction vessels embodied in a transparent band is automatically filled with the liquid to be analyzed and each vessel of the group is automatically filled with a different one of several reagents. Each vessel is then led past an individual light source and photocell, which latter detects the reaction and sends a signal to a chart recorder or other suitable device.

3,676,081
REMOVAL OF TITANIUM FROM MONAZITE ORES
Joseph Peter Mazza, 2497 Forest Ave., Niagara Falls, N.Y. 14301
No Drawing. Filed Dec. 31, 1968, Ser. No. 788,312
Int. Cl. C22b *61/04, 53/00*
U.S. Cl. 23—327 **11 Claims**

Titanium occurring as an impurity in monazite ores is removed by treatment of a thorium chloride solution derived from said ores which contains said titanium with tannic acid to precipitate the titanium, thereby removing 90% or more of the latter.

3,676,082
MAGNETIC COMPOSITIONS
Murray Robbins, Trenton, N.J., assignor to RCA Corporation
Filed May 19, 1967, Ser. No. 639,798
Int. Cl. C01b *19/00*; H01f *1/00, 1/06*
U.S. Cl. 23—367 **9 Claims**



A new magnetic material comprises the molar formula $MM'_2Z_{3+y}X_{1-y}$ where: Z consists essentially of at least one of the chalcogenides, S^{2-}, Se^{2-}, Te^{2-}; X consists essentially of at least one of the halides, Cl^-, Br^-, I^-; M consists essentially of copper ions; M′ consists essentially of chromium ions; and y is a number from zero to less than 1. Values of y exist above which the material behaves as a conductor and at or below which the material behaves as a semiconductor. The compositions are generally in the spinel crystal class and are useful in magnetic and semiconductor devices. A method of preparing the above material comprises first mixing the starting materials copper halide, chromium, chalcogen and copper in the molar ratios to give the desired product. Then pressed pellets of the mixture are formed and placed in evacuated quartz tubes. The pellets are then fired for at least 10 hours at 700–800° C.

3,676,083
MOLYBDENUM BASE ALLOYS
Richard F. Cheney and Donald S. Parsons, Towanda, Pa., assignors to Sylvania Electric Products Inc.
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,754
Int. Cl. B22f *3/00*
U.S. Cl. 29—182 **5 Claims**

A molybdenum base alloy is disclosed that has a recrystallization temperature above that of molybdenum and upon being heated above its recrystallization temperature forms an interlocking grain structure. The alloy comprises, in parts per million by weight of the alloy, from about 30 to about 180 parts per million of aluminum, from about 600 to about 2500 parts per million of silicon and from about 50 to about 150 parts per million

of an alakli metal. A process for preparing the alloy is disclosed that involves forming a uniform mixture of finely divided molybdenum dioxide and a sufficient amount of a recrystallization modifier, reducing the molybdenum dioxide in the mixture to molybdenum, compacting the mixture into shaped articles and thereafter heating the articles in a reducing atmosphere under controlled rate of heating by self-resistance heating.

3,676,084
REFRACTORY METAL BASE ALLOY COMPOSITES

Max Quatinetz, Bay Village, John W. Weeton, Rocky River, and Thomas P. Herbell, Parma, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Original application Mar. 25, 1966, Ser. No. 539,255, now Patent No. 3,472,709, dated Oct. 14, 1969. Divided and this application Jan. 24, 1969, Ser. No. 793,657
Int. Cl. C22c *31/04*
U.S. Cl. 29—182.5 **2 Claims**

High temperature composites of a dispersion strengthened tungsten wherein a portion of the refractory compounds are reprecipitated for uniform distribution and a finer particles size.

3,676,085
COBALT BASE COATING FOR THE SUPERALLOYS

Dennis J. Evans, South Windsor, and Richard C. Elam, Manchester, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

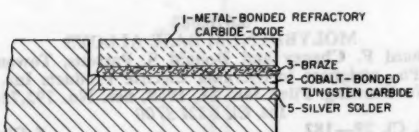
Continuation-in-part of application Ser. No. 795,616, Jan. 31, 1969. This application Feb. 18, 1971, Ser. No. 116,322
Int. Cl. C22c *19/00*; B32b *15/00*
U.S. Cl. 29—194 **3 Claims**

The oxidation-erosion and sulfidation resistance of the nickel- and cobalt-base superalloys is markedly improved through the use of a coating consisting of cobalt, chromium, aluminum and an active metal such as yttrium, particularly at the composition, by weight, of 15–40 percent chromium, 10–25 percent aluminum, .01–5 percent yttrium, balance cobalt.

3,676,086
METAL/CARBIDE-OXIDE COMPOSITE

Dong M. Chay and Ralph K. Iler, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Nov. 25, 1968, Ser. No. 784,999, now Patent No. 3,567,408, dated Mar. 2, 1971. Divided and this application Dec. 8, 1970, Ser. No. 96,292
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 **12 Claims**

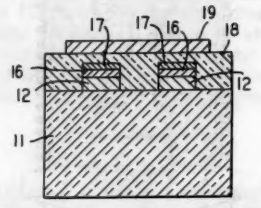


Disclosed are composite structures comprising (1) a dense, metal-bonded refractory carbide-oxide element metallurgically bonded with a copper-alloy to (2) a dense, cobalt-bonded tungsten carbide element having a substantially uniform coefficient of thermal expansion of from 0.5 to 1.5 times that of said carbide-oxide element. The composites are particularly useful as cutting edges for milling and turning cast iron and hardened steels.

3,676,087
TECHNIQUE FOR THE FABRICATION OF A PHOTOLITHOGRAPHICALLY DEFINABLE, GLASS COVERED GOLD CONDUCTOR PATTERN

Gerald Burt Fefferman, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 15, 1971, Ser. No. 123,973
Int. Cl. B23p *3/20*; C23b *5/50*; B44d *1/14*
U.S. Cl. 29—195 G **5 Claims**



A technique is described for enhancing the wettability characteristics of a photolithographically definable gold conductor pattern with respect to glass wherein a thin film of rhodium is interposed between the gold and the applied glass film. The resultant structure includes a smooth, defect-free glass insulating film and is uniquely suited for multilayer electronic circuitry including a glass dielectric.

3,676,088
COMPOSITE ARTICLE

Michael J. Pryor, Woodbridge, Stanley Shapiro, New Haven, Derek E. Tyler, Cheshire, and John Shabarack, Guilford, Conn., assignors to Olin Corporation

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,742
Int. Cl. B21b *3/00*; B32b *15/20*
U.S. Cl. 29—199 **10 Claims**

The disclosure teaches a composite cuprous article particularly useful as a brazing sheet. The composite has a core of a copper base alloy having a solidus temperature in excess of 1900° F. clad with a dissimilar copper base alloy containing from 22 to 40% manganese.

3,676,089
MOTOR FUEL COMPOSITION

Herbert C. Morris, Wappingers Falls, and Peter Dorn, Lagrangeville, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,700
Int. Cl. C10l *1/18, 1/22*
U.S. Cl. 44—62 **6 Claims**

Motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing (a) from 0.0004 to 0.1 weight percent based on said composition of an N-polyamine substituted alkenyl succinamic acid or corresponding succinimide in combination with (b) from 0.003 to 0.20 volume percent of (1) a polymer of a C_2 to C_6 unsaturated hydrocarbon, (2) a copolymer of a C_2 to C_6 unsaturated hydrocarbon, or (3) the corresponding hydrogenated polymer or copolymer, said polymer or copolymer having a molecular weight in the range from about 500 to 3500 and a method for operating an internal combustion gasoline engine.

3,676,090

COMPOSITION OF MATTER AND METHOD OF TREATING INTERNAL COMBUSTION ENGINE FUEL GASES

Abraham M. Herbsman, Harbor City, Calif., by Clarke Merle Kates, administrator of Abraham Herbsman, deceased

No Drawing. Division of application Ser. No. 864,241, July 31, 1969, now Patent No. 3,642,901, which is a division of application Ser. No. 759,780, Sept. 13, 1968, now Patent No. 3,488,169, which in turn is a continuation-in-part of application Ser. No. 283,550, May 27, 1963. This application June 15, 1970, Ser. No. 57,419
Int. Cl. C10l *1/26*
U.S. Cl. 44—72 4 Claims

A composition of matter, which is soluble in gasoline and in liquid aliphatic hydrocarbons, and which consists of the product, produced by reacting boron trifluoride ethyl ether complex with an amine reagent, selected from the group consisting of tertiary nonyl amine, a mixture of tertiary-alkyl primary amines, ranging from

$$t\text{-}C_{12}H_{25}NH_2 \text{ to } t\text{-}C_{15}H_{31}NH_2$$

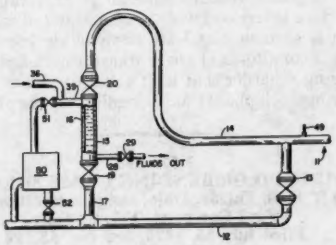
a mixture of tertiary-alkyl primary amines, ranging from $t\text{-}C_{18}H_{37}NH_2$ to $t\text{-}C_{24}H_{49}NH_2$, and primary alkyl aryl amines in which the alkyl radical is large enough to impart solubility to the reaction product in gasoline and liquid aliphatic hydrocarbons.

3,676,091

METHOD FOR FORMING AND CIRCULATING PLUGS IN A PIPELINE

John P. Fraser, Houston, and David E. Hartman, Seabrook, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,099
Int. Cl. F17d *1/04*
U.S. Cl. 48—190 1 Claim



A method for forming and circulating a plug within a pipeline having a gas stream flowing therein by reacting water with gas to form a gas hydrate plug which is subsequently circulated through the pipeline.

3,676,092

OVERSIZED ABRASIVE COATED PRODUCTS

Halsey W. Buell, Niagara Falls, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,393
Int. Cl. B24b *1/00*
U.S. Cl. 51—295 4 Claims

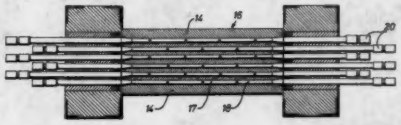
An abrasive coated product, e.g., an abrasive belt or abrasive disc, having on the abrasive face thereof an oversize of at least about 0.5 lb./ream of a highly chlorinated paraffin or mixture thereof having an average chain length of at least 20 carbon atoms said product being characterized by an increased rate of stock removal and a greater total stock removal during prolonged grinding compared to a product lacking said oversize.

3,676,093

FURNACE FOR THE PRODUCTION OF GLASS FIBERS

Nils Gustav Schrewelius, Hallstahammar, Sweden, assignor to Aktiebolaget Kanthal, Hallstahammar, Sweden

Filed Sept. 2, 1970, Ser. No. 68,986
Claims priority, application Sweden, Sept. 3, 1969, 12,189/69
Int. Cl. C03b *37/02*
U.S. Cl. 65—1 8 Claims



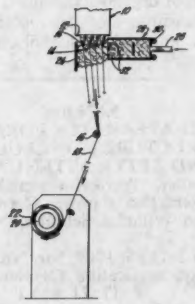
In a furnace for use in the production of glass fibers at least a portion of the bottom wall of a compartment for molten glass is formed by one or more rods consisting essentially of molybdenum disilicide and having transverse through bores forming outlets for the molten glass. The rods may be heated by passing current through them.

3,676,094

METHOD OF COATING GLASS FIBERS

Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 8, 1970, Ser. No. 1,501
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 14 Claims

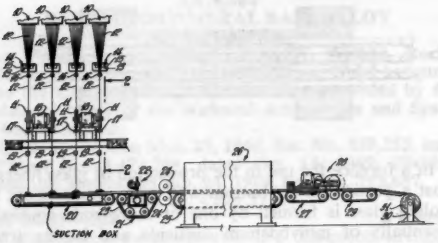


The method of coating glass fibers by contacting the fibers with a foam of the coating material. In one method, the foam is supported adjacent the hot bushing from which the molten streams of glass are pulled to form the filaments, so that the foam contacts the fibers before the fibers pick up any appreciable amount of water or organic materials from the atmosphere. The foam may be of organic base, so that the surface has oleophobic portions extending outward and oleophilic portions extending into the organic material. The oleophobic portions are preferably a coupling agent for the glass, and the oleophilic portions preferably have a benzene ring adjacent the terminal ends. This process can also be used to coat woven fabrics by heat cleaning the fabric and then contacting it with the foam. The foam of coating material may be positioned in the path of fibers issuing from a centrifuge to cushion and coat the fibers. The foam of coating material may also be projected into a gas stream carrying randomly oriented fibers to produce a glass fiber mat, or can be spread upon the surface of the mat, and the foam broken to wet out the fibers and produce a bonded mat.

3,676,095
PROCESS FOR PRODUCING AIR BLOWN GLASS FIBER STRAND MAT

Joseph P. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of application Ser. No. 693,351, Dec. 26, 1967. This application June 25, 1970, Ser. No. 56,054
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 8 Claims

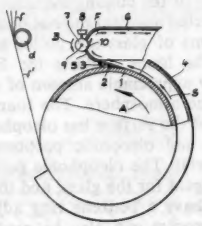


A process of making a mat of glass fibers wherein a strand of glass fibers frictionally engages the surface of a revolving cylinder from which the strand is tangentially discharged onto a moving conveyer. The strand is caused to be randomly looped upon the conveyer by alternate blasts of air which laterally impinge upon the strand to throw the strand in a looped fashion from side to side across the conveyer. High uniform mat strengths are obtained by wetting the individual filaments of glass with a water solution of organosilane and a nonionic lubricant, the principal constituent of the molecules of which is a polyoxyethylene polyhydric alcohol condensate grouping.

3,676,096
PROCESS AND APPARATUS FOR MAKING GLASS FIBER STRUCTURES INCLUDING COATING BEFORE AND AFTER ATTENUATION

Wolfgang Schuller, Wertheim am Main, and Harald Hohlfeld, Wertheim (Nord), Germany, assignors to Werner Hugo Wilhelm Schuller, Munich, Grunwald, Germany

Filed July 16, 1969, Ser. No. 842,271
Claims priority, application Germany, July 18, 1968, P 17 71 833.1
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 16 Claims



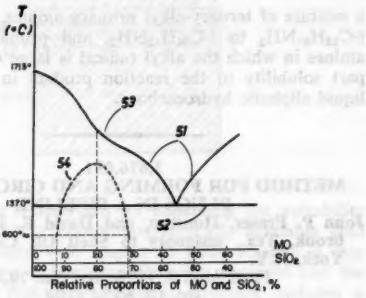
In making glass fiber structures, the strands of glass are first coated with a liquid, for instance a lubricant, prior to their delivery to the drawing drum, and the glass fibers formed on the drawing drum are then coated in a separate application, while separated from each other, with a liquid coating medium after their removal from the drawing drum and prior to their consolidation into a glass fiber structure.

An apparatus for carrying out the second coating application includes an air channel leading away from the drawing drum and liquid transfer means protruding into the air channel so as to be contacted by the glass fibers carried through said air channel in a stream of air.

3,676,097
PHYSICALLY STRENGTHENING BODIES MADE OF AT LEAST PARTLY VITREOUS MATERIAL

Emile Plumat, Gilly, and Robert van Laethem, Loverval, Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed Apr. 26, 1968, Ser. No. 724,490
Claims priority, application Luxembourg, Apr. 27, 1967, 53,548
Int. Cl. C03b *29/00*; C03c *17/00*
U.S. Cl. 65—33 7 Claims

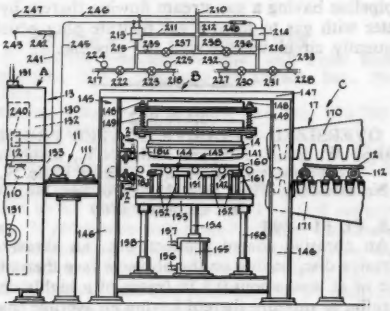


A process for physically strengthening a body made of vitreous or partly vitreous material by providing the body with surface layers or coatings of a material whose composition is such that at least one coating ingredient can undergo a solid-to-solid phase transformation which gives the coating a hardness at least equal to that of the body, and causing such phase transformation to take place.

3,676,098
METHOD OF BENDING GLASS SHEETS

Harold R. Hall, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed July 16, 1970, Ser. No. 55,394
Int. Cl. C03b *23/02*
U.S. Cl. 65—106 4 Claims



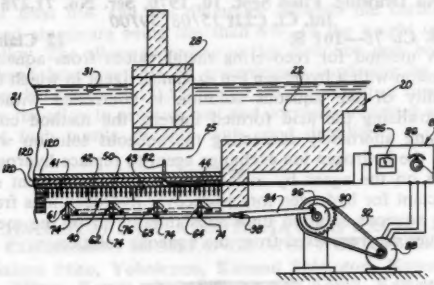
A method of bending glass sheets in which a sheet, that has been heated to a temperature at which the glass

softens, has a surface thereof cooled prior to bending the heated and softened sheet against a shaping mold; together with apparatus for use in performing this method.

3,676,099
GLASS MELTING FURNACE AND CONTROL MEANS FOR THE FLOW OF MOLTEN SILICATES THEREIN

Palmer Fultz, 4280 Hayden Run Road, Columbus, Ohio 43221

Filed Feb. 17, 1970, Ser. No. 12,107
Int. Cl. C03b 5/22
U.S. Cl. 65—162 21 Claims



A throat-type glass melting furnace provided with variable radiation control means for controlling the flow of molten silicates therein. The control means is characterized by a variable radiation retarding means underlying a radiation area of the furnace bottom along the path of flow of molten silicates through the furnace throat so as to controllably and efficiently dissipate heat from the molten silicates at a specific location and in a controlled manner.

3,676,100
PROCESS FOR PRODUCING A STABILIZED SUSPENSION NPK, NP OR PK FERTILIZER

Wilfred Gerhardt, Knapsack, near Cologne, and Heinz Harnisch, Lovenich, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Feb. 19, 1970, Ser. No. 12,860
Claims priority, application Germany, Feb. 21, 1969, P 19 08 721.9
Int. Cl. C05b 21/00
U.S. Cl. 71—37 3 Claims

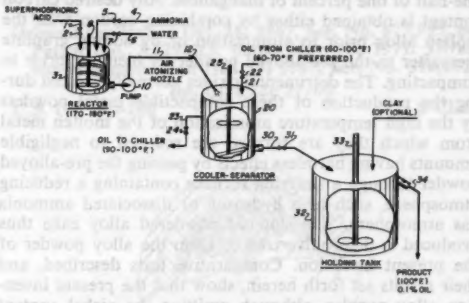
Production of stabilized NPK-, NP- or PK-suspension fertilizers having an overall nutrient concentration of at least 20 grams, preferably more than 30 grams, per 100 grams suspension fertilizer. The stabilizer in the fertilizers is a neutralization sludge obtained in the neutralization of crude phosphoric acid produced by wet-processing treatment of phosphate ores with the use of an alkali liquor and/or ammonia.

3,676,101
SELF-SUSPENDING AMMONIUM POLYPHOSPHATE SUSPENSION FERTILIZER

Fred D. Nix, Phil Campbell, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of application Ser. No. 110,537, Jan. 28, 1971, which is a continuation-in-part of abandoned application Ser. No. 836,386, June 25, 1969. This application Aug. 2, 1971, Ser. No. 168,280
Int. Cl. C05b 7/00
U.S. Cl. 71—34 4 Claims

A process for improving the storage characteristics of ammonium polyphosphate clayless base suspensions while increasing the grade up to 14–47–0 involves causing fine crystals of ammonium polyphosphate to be formed in the fresh suspension by close control of the P_2O_5 (80–81 per-



PRODUCTION OF AMMONIUM POLYPHOSPHATE SUSPENSIONS COOLING BY DIRECT CONTACT WITH OIL

cent) content of the superphosphoric acid fed thereto and quick-cooling the product by direct contacting in a chilled fluid immiscible therewith.

3,676,102
METHOD OF TREATING PLANTS

Arthur R. Clark and Margaret M. Clark, both of P.O. Box 283, Spring Lake, N.J. 07762

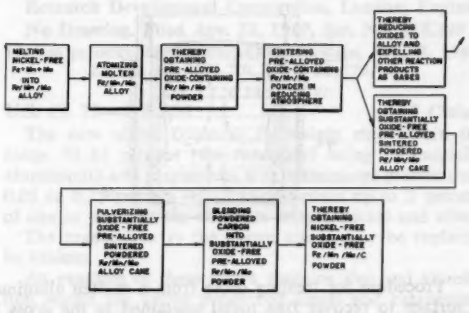
No Drawing. Application Oct. 30, 1968, Ser. No. 771,975, now Patent No. 3,592,910, which is a continuation-in-part of application Ser. No. 676,019, Oct. 18, 1967. Divided and this application Oct. 19, 1970, Ser. No. 82,122
Int. Cl. A01n 5/00, 3/02
U.S. Cl. 71—127 5 Claims

Liquid polyterpenes having a molecular weight of from 272 to 544 are applied to growing plants, particularly nursery stock and food crops, to provide the plants with a protective coating. The polyterpene coating inhibits the transpiration of water from the plants, and enhances plant growth.

3,676,103
PRE-ALLOYED NICKEL-FREE SILICON-FREE MINIMAL-OXIDE LOW-ALLOY IRON POWDER AND METHOD OF MAKING THE SAME

Gordon J. Le Brasse, Ann Arbor, and Boniface Stolarski, Grosse Pointe Woods, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Feb. 17, 1971, Ser. No. 115,994
Int. Cl. B22d 23/08; B22f 9/00
U.S. Cl. 75—.5 BA 9 Claims


MELTING NICKEL-FREE
ATOMIZING MOLTEN
THEREBY OBTAINING PRE-ALLOYED OXIDE-CONTAINING POWDER
SINTERING PRE-ALLOYED OXIDE-CONTAINING POWDER IN REDUCING ATMOSPHERE
THEREBY REDUCING OXIDES TO ALLOY AND EXPELLING OTHER REACTION PRODUCTS AS GASES
THEREBY OBTAINING SUBSTANTIALLY OXIDE-FREE PRE-ALLOYED SINTERED POWDERED ALLOY CAKE
PULVERIZING SUBSTANTIALLY OXIDE-FREE PRE-ALLOYED SINTERED POWDERED ALLOY CAKE
BLENDING POWDERED CARBON INTO SUBSTANTIALLY OXIDE-FREE PRE-ALLOYED POWDER
THEREBY OBTAINING NICKEL-FREE SUBSTANTIALLY OXIDE-FREE POWDER

A pre-alloyed nickel-free silicon-free low-alloy iron powder with minimal oxide content yet possessing good hardenability and good mechanical and metallurgical

properties for the production of sintered powdered metal articles is prepared by alloying iron with approximately one-half of one percent molybdenum and approximately one-half of one percent of manganese. Any desired carbon content is obtained either by combining carbon with the molten alloy prior to atomization or by adding graphite thereafter to the pre-alloyed powder by blending prior to compacting. The detrimental oxides normally created during the production of these compactible metal powders by the high temperature atomization of the molten metal from which they are formed are reduced to negligible amounts having harmless effects by passing the pre-alloyed powder through a sintering furnace containing a reducing atmosphere, such as a hydrozen or dissociated ammonia gas atmosphere. The sintered powdered alloy cake thus produced is then pulverized to form the alloy powder of the present invention. Comparative tests described, and their results set forth herein, show that the present invention alloy powder, although omitting the nickel content previously thought necessary, nevertheless retains the functions of, and compares favorably in performance with the prior nickel-content iron alloy powders.

3,676,104

PRE-TREATMENT OF METAL-BEARING MINERAL PRODUCTS

Per G. Kihlstedt, Stockholm, Sweden, assignor to AB Cold-Bound Pellets, Djurshol, Sweden

Filed Mar. 21, 1969, Ser. No. 809,289
Claims priority, application Sweden, Mar. 25, 1968, 3,918/68; Apr. 11, 1968, 4,947/68
Int. Cl. C21b *1/24*
U.S. Cl. 75—3 **7 Claims**

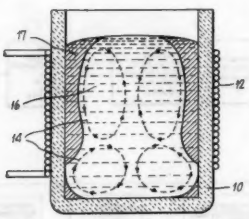
Pellets of metal-bearing mineral concentrates are produced by mixing together concentrates differing in ranges of grain sizes, together with a binder, grinding the mixture to a pre-determined extent, forming the ground mixture into pellets and autoclaving the pellets. Normally, the concentrates are moist, in which event the pellets are partially dried before being subjected to autoclaving.

3,676,105

RECOVERY OF METAL FROM DROSS

Melvin Elliott McLeod, Arvida, Quebec, Canada, John Edward Deutschman, Mandeville, Jamaica, West Indies, and Herbert Warren Percival, Beaconsfield, Quebec, and Hans Spoel, St. Cesaire, Quebec, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 8, 1971, Ser. No. 105,025
Int. Cl. C22b *7/00, 21/00*
U.S. Cl. 75—68 R **16 Claims**



Procedure for treating dross from a molten aluminum surface to recover free metal contained in the dross by heating the dross in an induction furnace in the presence of a salt flux. Preferably, the dross is initially rapidly quenched upon removal from the molten surface, to maintain a high free metal content in the dross. With a heel of molten aluminum established in the induction furnace, a substantial proportion of the flux is added, and the dross is then fed to the melt in successive increments which may be interspersed with further additions of flux. Heat and fluid circulation caused by induced currents in the melt and by the electromagnetic field effect separation and coalescence of free metal from the dross.

3,676,106

ION EXCHANGE PROCESS FOR THE RECOVERY OF METALS WITH CATION EXCHANGE AGENTS

Wayne C. Hazen, Denver, Colo., assignor to Hazen Research, Inc., Golden, Colo.

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,278
Int. Cl. C22f *15/08, 59/00*
U.S. Cl. 75—101 R **12 Claims**

A method for recovering metal values from aqueous solution with a hydrogen ion exchange agent in which the acidity of the aqueous solution is controlled without neutralizing the acid formed therein, the method comprising alternately contacting the aqueous solution with (1) the hydrogen ion exchange agent to replace hydrogen ions on the agent by metal ions and (2) a solvent extractant for hydrogen ions to recover hydrogen ions from the aqueous solution until substantially all of the metal values are recovered from the aqueous solution.

3,676,107

REFINING IRON-BEARING WASTES

Paul G. Barnard, Aaron G. Starliper, and James B. Stephenson, Rolla, Mo., assignors to the United States of America as represented by the Secretary of the Interior

Filed Jan. 4, 1971, Ser. No. 103,559
Int. Cl. C22b *3/00*
U.S. Cl. 75—109 **4 Claims**

Iron-bearing wastes, such as steelmaking dusts, are treated with sulfuric acid to form sulfates of the iron, copper, lead, manganese and zinc in the dust. The sulfated material is roasted at a temperature of about 550 to 700° C. to convert the iron sulfate to iron oxide and is then leached with water to remove the soluble copper, zinc and manganese sulfates.

The lead is removed from the iron-bearing residue by roasting in a reducing atmosphere whereby the lead sulfate is decomposed, the decomposition products volatilized and the lead collected in the form of lead oxide. The iron-rich residue is then reduced to a metallized product suitable for recycle to a steelmaking plant.

3,676,108

LOW CARBON HIGH YIELD STRENGTH ALLOY STEEL

William F. McGarrity, Dearborn, Mich., assignor to National Steel Corporation

No Drawing. Filed June 1, 1970, Ser. No. 42,511
Int. Cl. C22c *39/54*
U.S. Cl. 75—123 B **7 Claims**

A low carbon, low alloy steel composition which after being heat treated is characterized by high yield strength and ductility suitable for cold forming operations consisting essentially by weight of:

Carbon: about 0.05–0.25%
Manganese: about 0.50–1.30%
Silicon: about 0.40–0.90%
Zirconium: about 0.03–0.15%
Boron: about 0.0005–0.0025%

with the balance iron and residual impurities. The heat treated steel compositions can be cold formed to produce for example truck frame rails.

3,676,109

RUST AND HEAT RESISTING FERROUS BASE ALLOYS CONTAINING CHROMIUM AND ALUMINUM

Hugh S. Cooper, Shaker Heights, Ohio, assignor to Cooper Metallurgical Corporation, Cleveland, Ohio

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,278

Int. Cl. C22c *37/10, 39/14*

U.S. Cl. 75—124 5 Claims

Rust and heat resisting ferrous base alloys comprising by weight between about 3% and 10% aluminum, between about 4% and 8% chromium, about 0.5% copper, less than 0.05% carbon, and the balance substantially iron. The aluminum and chromium together total at least 9%, with either the chromium or the aluminum being at least 6% and the difference between the chromium and aluminum being less than 6%, of the weight of the alloy. The alloys according to this invention may be rendered heat treatable by precipitation hardening by adding between about 0.5% and 2.0% by weight of titanium to the alloy to produce rust and corrosion resistant alloys of high tensile strength with good ductility.

3,676,110

CHROMIUM BASE ALLOYS HAVING EXCELLENT CORROSION RESISTANCE AND WORKABILITY

Satoru Mito, Yokohama, Kazumi Shimotori, Kawasaki, Mituo Kawai, Yokohama, and Kanzi Kawaguchi, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Dec. 8, 1970, Ser. No. 96,220

Claims priority, application Japan, Dec. 9, 1969, 44/98,281

Int. Cl. C22c *19/00, 27/00*

U.S. Cl. 75—134 3 Claims

Cr-Ni alloys having excellent workability and corrosion resistance, which comprises 40–70% chromium, 2–7% manganese, and nickel as the remainder. Said alloys may contain 0.5% max. carbon or 0.2% max. nitrogen.

3,676,111

METHOD OF GRAIN REFINING ALUMINUM BASE ALLOYS

Peter F. Wieser, Bay Villlage, Ohio, and James E. Dore, Milford, Conn., assignors to Olin Corporation

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,946

Int. Cl. C22c *21/00*

U.S. Cl. 75—142 10 Claims

The instant disclosure teaches a method of grain refining aluminum base alloys. The method of the present invention comprises adding boron and titanium to the melt in specifically defined quantities.

3,676,112

ANTICARIOGENIC DENTAL AMALGAM

Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

No Drawing. Filed May 19, 1970, Ser. No. 38,889

Int. Cl. C22c *5/00;* A61k *5/02*

U.S. Cl. 75—173 R 7 Claims

This invention relates to an anticariogenic dental amalgam and method of reducing dental caries at the margin of a dental restoration. Moreover, this invention relates to a specific dental amalgam additive, stannous hexafluorozirconate, $SnZrF_6$, that provides anticariogenic effectiveness without appreciably affecting the physical properties set forth by the American Dental Association for dental amalgam alloys.

3,676,113

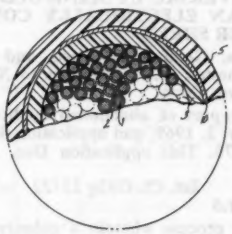
ALUMINUM-ZINC-BORON ALLOYS

Michael J. Pryor and William H. Anthony, Hamden, Conn., assignors to Olin Mathieson Chemical Corporation

Original application Oct. 25, 1967, Ser. No. 677,955, now Patent No. 3,579,313, dated May 18, 1971. Divided and this application Oct. 29, 1967, Ser. No. 870,972

Int. Cl. C22c *21/00*

U.S. Cl. 75—146 8 Claims



This invention relates to a novel high strength Al-Zn-B alloy metallurgically bonded to steel and heat treating processes therefore, for use in both aerial and underground cable sheathing.

3,676,114

IMPROVEMENT IN THE PROCESS RELATING TO ALLOYS CONTAINING PLATINUM GROUP METALS

Gordon Leslie Selman, High Wycombe, England, assignor to Johnson, Matthey & Co., Limited

No Drawing. Continuation-in-part of application Ser. No. 740,017, June 26, 1968. This application Aug. 28, 1970, Ser. No. 67,986

Claims priority, application Great Britain, June 28, 1967, 29,958/67; Jan. 23, 1968, 3,520/68

Int. Cl. C22c *5/00*

U.S. Cl. 75—172 7 Claims

Method of dispersion strengthening rhodium-platinum alloys in which the dispersed phase consists essentially of at least one transition element in an amount up to 20 atomic percent selected from the titanium, vanadium, zirconium, niobium, hafnium and tantalum.

3,676,115

ZINC ALLOYS

George Anthony Hare, Highworth, and Alan Ernest William Smith, Swindon, England, assignors to National Research Development Corporation, London, England

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,389

Claims priority, application Great Britain, May 3, 1968, 21,118/68; Dec. 20, 1968, 60,579/68

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 AM 7 Claims

The new alloys comprise by weight zinc within the range 70–82 percent (the remainder being substantially aluminium) and magnesium within the range greater than 0.05 to 0.25 percent which may contain up to 2 percent of one or more of the elements copper, nickel and silver.

The magnesium in the above alloys may be replaced by lithium.

An example of these alloys contains zinc and aluminium within the above prescribed limits and magnesium and copper within the range 0.125 ± 0.025 and 1.25 ± 0.25 percent respectively.

The alloys have improved mechanical properties and corrosion resistance and the microstructures produced

are stable at user temperatures. Additionally, the alloys retain the super plastic behaviour of the zinc-aluminium eutectoid.

ERRATUM

For Class 90—11 A see:
Patent No. 3,676,120

3,676,116

IMAGE REVERSAL IN MANIFOLD IMAGING USING AN ELECTRICALLY CONDUCTIVE RECEIVER SHEET

Ivar T. Krohn, Geoffrey A. Page, and Gedeminas J. Reinis, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 812,734, Apr. 2, 1969, and application Ser. No. 81,357, Oct. 16, 1970. This application Dec. 18, 1970, Ser. No. 99,721

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.3 **23 Claims**

An imaging process wherein a cohesively weak electrically photosensitive imaging layer sandwiched between a donor sheet and an electrically conductive receiver sheet is subjected to an electric potential and imagewise electromagnetic radiation to which the layer is sensitive such that upon sandwich separation under an electric field the imaging layer fractures in imagewise configuration providing a positive image on one of the sheets and a negative image on another sheet. Prior to sandwich separation, the electric potential is modified causing a reversal of image sense on each of the sheets.

3,676,117

METHOD OF ELECTROPHOTOGRAPHY

Koichi Kinoshita, Narashino-shi, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 9, 1968, Ser. No. 766,237

Claims priority, application Japan, Oct. 20, 1967, 42/67,181

The portion of the term of the patent subsequent to Apr. 11, 1989, has been disclaimed

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **5 Claims**

In a method of electrography comprising the steps of applying a first field of one polarity across a photosensitive element including a photoconductive layer and a highly insulated layer integrally bonded to one side of the photoconductive layer and applying a second field of opposite polarity concurrently with or before projection of a light image whereby to form an electrostatic latent image corresponding to the light image on the surface of the highly insulative layer, uniform light is projected on the photosensitive element on the side opposite to that of the highly insulative layer concurrently with or prior or subsequent to the application of the first field.

3,676,118

REFLEX XEROGRAPHIC IMAGING SYSTEM

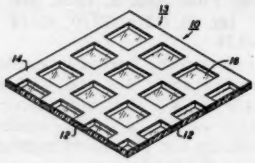
George R. Mott, Rochester, and Edward M. Van Wagner, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 619,618, Mar. 1, 1967. This application Aug. 26, 1970, Ser. No. 67,115

Int. Cl. G03g *5/00, 13/00*

U.S. Cl. 96—1.5 **12 Claims**

A xerographic imaging system employing a new xerographic plate adapted for reflex exposure, the plate comprising an opaque electrically conductive grid of grid portions and interstices, the grid portions overcoated with an imaging photoconductor and the interstices at least partially filled with a material substantially transparent to



that wavelength radiation to which the imaging photoconductor is photosensitive, said material preferably comprising a photoconductive or electrically "leaky" dielectric filler material to form a plate preferably having a smooth face at the imaging photoconductor face of the plate.

3,676,119

SPECTRAL SENSITIZATION OF PHOTOCONDUCTIVE COMPOSITIONS

Henri Depoorter, Mortsel, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

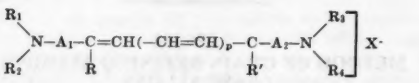
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,338

Claims priority, application Great Britain, Jan. 20, 1969, 3,157/69

Int. Cl. G03g *7/00, 5/08*

U.S. Cl. 96—1.7 **10 Claims**

An electrophotographic recording material comprising an inorganic photoconductive substance, especially zinc oxide, is described wherein the said substance is spectrally sensitized by means of a dye corresponding to the formula:



wherein:

each of A_1 and A_2 stands for an arylene group,
each of R_1, R_2, R_3 and R_4 represents an alkyl group, a cylcloalkyl group, an aralkyl group or an aryl group or R_1+R_2 and/or R_3+R_4 together represent the atoms necessary to close a heterocycle,
each of R and R′ represents hydrogen, alkyl, cycloalkyl, aralkyl or aryl,
p is 0, 1 or 2, and
X^- is an anion.

The dyes have a favorable sensitizing action and confer only a very low and neutral coloring to the photoconductive layer.

3,676,120

SIDE OPERATED DRAWBOLT FOR TOOL-CARRYING SPINDLE

Leonard Nelson and Thomas Wilson, Trumbull, Conn., assignors to Custom Tool & Machine Co., Inc., Bridgeport, Conn.

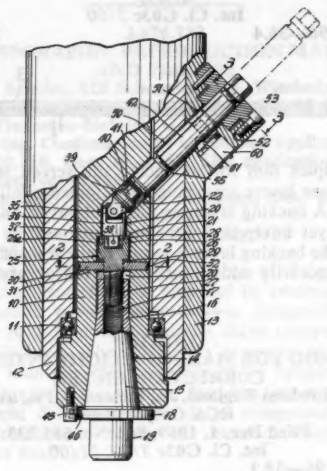
Filed Feb. 26, 1971, Ser. No. 119,177

Int. Cl. B23c *5/26*

U.S. Cl. 90—11 A **6 Claims**

A simplified drawbar means for eliminating the use of the long drawbar unit extending through the spindle and

providing a side actuated device for turning a tool mounting bolt in the spindle by means of a universal joint. The device which is extremely simple and can be easily assembled is contained in the end of the spindle near the work so that it is readily available for actuation. It is



particularly useful in machine tools having a vertically disposed spindle since it provides a short drawbar with a side actuator therefor which is conveniently located adjacent the tool-carrying end of the spindle for drawing the tool carrier into position.

3,676,121

MULTI-COLOR REPRODUCTIONS

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 796,897, Feb. 5, 1969, and Ser. No. 833,771, June 16, 1969. This application Aug. 12, 1969, Ser. No. 849,492

Int. Cl. G03c *7/16, 1/68*

U.S. Cl. 96—13 **37 Claims**

The method of forming a multicolor reproduction which comprises: coating a substrate bearing a first color fused in image-wise configuration to said substrate with a solid, light-sensitive organic layer having a thickness of at least 0.1 micron while maintaining said first color in its image-wise configuration, said light-sensitive organic layer being capable of developing a R_d of 0.2 to 2.2; exposing said light-sensitive organic layer to actinic radiation in image-receiving manner to establish a potential R_d of 0.2 to 2.2; applying to said layer of organic material, free flowing powder particles of a second color having a diameter, along at least one axis of at least about 0.3 micron but less than 25 times the thickness of said organic layer; while the layer is at a temperature below the melting points of the powder and of the organic layer, physically embedding said powder particles as a monolayer in a stratum at the surface of said light-sensitive layer to yield an image having portions varying in density in proportion to the exposure of each portion; and removing non-embedded particles from said organic layer to develop a multicolor reproduction.

3,676,122

PROCESS FOR THE PRODUCTION OF NEGATIVE OR POSITIVE CONTINUOUS-TONE OR SCREENED IMAGES THEREOF

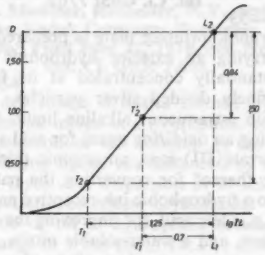
Ehrhard Hellmig, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 2, 1969, Ser. No. 838,475

Claims priority, application Germany, July 8, 1968, P 17 72 812.0

Int. Cl. G03b *27/76;* G03c *7/00*

U.S. Cl. 96—23 **5 Claims**



A process for the production of negative continuous-tone images from colored originals with different density ranges, wherein the exposure time is determined only by the densities of high-light areas in the original.

3,676,123

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Robert K. Stephens, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed July 13, 1970, Ser. No. 54,615

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **11 Claims**

Motion picture film composed of a plurality of layers includes at least a first outer layer having a friction reducing agent, e.g., particles of polytetrafluoroethylene, incorporated therein to minimize frictional resistance as the film contacts various mechanisms involved in processing, transporting, storing and projecting film strips, thus minimizing a lack of uniformity in film transport rates and obviating damage to the film as a result of frictional resistance.

3,676,124

PHOTOGRAPHIC NEGATIVE MATERIAL FOR COLOR DIFFUSION TRANSFER PROCESS

Kinji Ohkubo, Katsumi Hayashi, and Kazuya Sano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Oct. 13, 1969, Ser. No. 866,022

Claims priority, application Japan, Oct. 12, 1968, 43/74,386

Int. Cl. G03c *1/40, 5/54*

U.S. Cl. 96—290 **12 Claims**

Photographic diffusion transfer element with a silver halide emulsion containing a color developing agent and coupler dissolved in a high temperature boiling organic solvent which is immiscible with water, but miscible upon contact with an alkaline medium.

A color diffusion transfer process using the above element as a negative involves exposing the element and then,

by alkaline processing, freeing the solvent to thereby permit transfer to a positive element and yield a positive element. Conventional diffusion transfer steps are also practical.

3,676,125
METHOD OF PRODUCING PLANOGRAPHIC PRINTING PLATES
Louis Maria de Haes, Edegem, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium
No Drawing. Filed Apr. 24, 1970, Ser. No. 31,787
Claims priority, application Great Britain, Apr. 25, 1969, 21,279/69
Int. Cl. G03f 7/02
U.S. Cl. 96—33 11 Claims

A photographic printing plate is prepared from a sheet material carrying an exterior hydrophilic colloid layer having substantially concentrated at its free surface a pattern of finely divided silver particles, by contacting the same with an aqueous alkaline liquid fixer composition containing an oxidizing agent for said silver particles, e.g. cyanoferrate(III)-ions, an organic thioxo compound or tautomer thereof for converting the pattern of silver particles into a hydrophobic ink-receptive pattern, a higher fatty acid, e.g., oleic acid, for improving the ink-receptivity of said pattern, and a water-soluble nitrite, such as alkali metal nitrite or an ammonium nitrite, for stabilizing the dispersion of the higher fatty acid in the fixed liquid.

3,676,126
PLANAR TECHNIQUE FOR PRODUCING SEMICONDUCTOR MICROCOMPONENTS
Peter Albus, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Continuation of abandoned application Ser. No. 596,305, Nov. 22, 1966. This application Jan. 19, 1970, Ser. No. 4,446
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 7 Claims

The planar technique is improved by dissolving the part of oxide layer which forms on the semiconductor surface during diffusion of the emitter zone. The oxide layer may be phosphorus oxide glass. HF buffered with NH_4F is illustratory of dissolvent.

3,676,127
COLOR TELEVISION TUBE FABRICATION
Thomas F. Protzman, Worthington, Ohio, and William H. Magidson, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.
No Drawing. Filed Jan. 23, 1970, Ser. No. 5,363
Int. Cl. G03c 5/00, 5/04
U.S. Cl. 96—36.1 1 Claim

In the process of forming color television tube faceplates the improvement which comprises coating a cathode ray tube faceplate with a solid, light-sensitive layer capable of developing a R_{dp} of 0.2 to 2.2; exposing said light-sensitive organic layer in predetermined areas, corresponding to the predetermined cathodoluminescent areas of the faceplate, to actinic radiation in image receiving manner to establish a potential R_{dp} of 0.2 to 2.2; applying to said organic layer, free flowing powder particles comprising at least one light-absorbing pigment, said free flowing powder having a diameter along at least one axis of at least about 0.3 micron but less than 25 times the thickness of said organic layer; while the layer is at a temperature below the melting point of the powder particles and of the organic layer, physically embedding said powder particles as a monolayer in the stratum at the surface of said light-sensitive layer to yield an image having portions varying in density in proportion to the exposure of each portion; and removing non-embedded particles from said organic layer to develop a discrete pattern of powder particles comprising at least one light-absorbing pigment.

3,676,128
COMPLEX FILM FOR OBTAINING SILK SCREEN STENCILS
Henri Leopold and Jacques Pomathios, Poncin, France, assignors to Etablissements Tiflex, Poncin, France
Filed June 8, 1967, Ser. No. 644,683
Claims priority, application France, June 20, 1966, 47,439
Int. Cl. G03c 5/00
U.S. Cl. 96—36.4 5 Claims

A complex film for producing silk screen stencils includes three layers superposed and joined relative to one another. A backing layer, an emulsion layer, and a transparent layer interposed therebetween constitute the three layers. The backing layer is joined to the transparent layer only temporarily and is easily removed or peeled therefrom.

3,676,129
METHOD FOR MAKING A LIGHT INTENSITY CORRECTION FILTER
Frank Rowland Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation
Filed Dec. 1, 1969, Ser. No. 881,233
Int. Cl. G03c 5/00, 11/00
U.S. Cl. 96—38.3 5 Claims

To make a light intensity correction filter for a lighthouse:

(1) prepare a transmission pattern which, when placed in a predetermined position adjacent an element of the lens assembly of the lighthouse, compensates for nonuniformities in brightness due to asymmetrical refraction of light projected through the lens assembly;
(2) prepare a negative image of the transmission pattern;
(3) position is a lighthouse a light source, at least one optical element of the lens assembly, which element carries on one surface thereof a layer of a photosensitive composition containing light attenuation material, and the negative image;
(4) project light from the light source incident upon the coating of photosensitive composition;
(5) and then develop the exposed coating to produce the filter.

3,676,130
BEADED PLATE INTEGRAL PHOTOGRAPHY
Christoph B. Burckhardt, Berkeley Heights, and Edward T. Doherty, Morris Township, Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Nov. 26, 1969, Ser. No. 880,280
Int. Cl. G03c 9/00
U.S. Cl. 96—40 2 Claims

Apparatus for recording an integral photograph is disclosed comprised of a layer of minute, transparent spheres that adhere to a photosensitive emulsion.

3,676,131
CHEMICAL DEVELOPMENT OF LIGHT-SENSITIVE LEAD COMPOSITIONS
Jozef Frans Willems, Wilrijk, Frans Clement Heugebaert, Kontich, and Eric Maria Brinckman, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium
No Drawing. Filed Aug. 24, 1970, Ser. No. 66,589
Int. Cl. G03c 5/24, 1/00
U.S. Cl. 96—48 7 Claims

A process for recording information is described which comprises information-wise exposing to active radiation a photosensitive recording material containing a photosensitive lead compound and developing the latent image

formed by means of a sodium dithionite composition in the presence of a diquaternary cyclic ammonium salt which by the uptake of 1 electron forms stable Weitz-radicals. By the presence of the ammonium salt selective development is possible in a short time, at normal room temperature and normal pH-values.

3,676,132
THERMOGRAPHIC REPRODUCTION MATERIAL AND PROCESS

Siegfried Scheler, 120 Schonaustrasse, Wiesbaden-Schierstein, Germany, and Johannes Munder, 13 Lohmuhlweg, Wiesbaden-Biebrich, Germany

No Drawing. Continuation of abandoned application Ser. No. 690,756, Dec. 15, 1967. This application Dec. 1, 1970, Ser. No. 94,186
Claims priority, application Germany, Dec. 15, 1966, K 60,929
Int. Cl. G03c *1/58, 5/52, 5/34*
U.S. Cl. 96—49 **11 Claims**

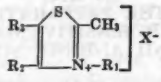
A thermographic material capable of fixing against post-imaging heat effects is prepared by coating a transparent natural paper support with a composition comprising a heat- and light-sensitive diazo compound and an organic acid. Thermographic exposure to infrared radiation results in the formation of an opaque decomposition image in the support. Post-imaging exposure to actinic light decomposes the diazo compound without image formation to render the material insensitive to subsequent heating.

3,676,133
DIAZOTYPE RECORDING PROCESS AND MATERIAL USED THEREIN

Albert Lucien Poot, Kontich, Jan Frans van Besauw, Brasschaat, and Henri Depoorter, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,606
Claims priority, application Great Britain, Dec. 30, 1969, 63,326/69
Int. Cl. G03c *1/58, 5/22, 5/34*
U.S. Cl. 96—49 **10 Claims**

Diazo copying process using as the coupling agent a thiazolium compound corresponding to the following general formula:



wherein:

X^- represents an anion and may be missing when the anion is present in the R_1 group,

R_1 represents an organic group introduced by quaternization, each of R_2 and R_3 represents an alkyl group or an aryl group and only one of R_2 and R_3 is hydrogen; and recording materials useful therein.

A preferred thiazolium compound is 2,3-dimethyl-thiazolium ethyltolusulphonate and a preferred diazonium compound is p-diethylaminobenzene-diazonium tetraborofluoride.

3,676,134
COPYING MATERIAL AND PROCESS FOR THE PREPARATION OF AUXILIARY COPIES FOR MULTICOLOR PRINTING

Fritz Uhlig, Wiesbaden-Biebrich, and Jurgen Braun, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Filed June 10, 1969, Ser. No. 831,993
Claims priority, application Germany, June 12, 1968, P 17 71 592.3
Int. Cl. G03c *1/52*; G03f *3/00*
U.S. Cl. 96—49 **7 Claims**

This invention relates to a copying material for use in the preparation of auxiliary copies for multicolor printing comprising a biaxially stretched and thermo-set polyester film as a support and a light-sensitive copying layer thereon, the latter containing at least one compound selected from the group consisting of a p-benzoquinone diazide and a p-benzoquinone imino diazide, at least one acid- and alkali-resistant dyestuff which is soluble in organic solvents, and at least one film-forming, substantially colorless, alkali-soluble resin.

3,676,135
PROCESS FOR FORMING DYE IMAGES

Walter J. Musliner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 22, 1970, Ser. No. 48,546
Int. Cl. G03c *7/00*
U.S. Cl. 96—54 **14 Claims**

Formazan dye image densities formed by treating a photographic metal image in a hydrophilic colloid binder layer with a tetrazolium salt solution in the presence of a metal complexing ligand are enhanced by the presence in said binder layer of a dispersion of at least one high-boiling substantially colorless, crystalloidal organic oil, the weight ratio of oil to hydrophilic colloid preferably being in the range of from about 10:1 to about 1:30 and the dispersed particles of the oil preferably having diameters in the range up to about 2μ.

3,676,136
PHOTOGRAPHIC STABILIZER COMPOSITIONS

Rowland G. Mowrey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 22, 1970, Ser. No. 48,547
Int. Cl. G03c *7/00*
U.S. Cl. 96—56 **21 Claims**

Aqueous stabilizer compositions comprising (1) a water-soluble addition complex of an alkali metal bisulfite and an aldehyde that preferably contains from one to six carbon atoms and from one to three carbonyl groups with at least one of the carbonyl groups being part of an aldehyde group in the concentration range of from about 0.5 g./l. to about 100 g./l. and either, (2) a sufficient amount of an alkali metal hydroxide or an acid to adjust the pH of the composition in the range of from 3 to 7, or (3) a buffer comprising (a) an acid, such as, sulfuric, nitric, phosphoric, boric, hydrochloric acids and organic carboxylic acids in the concentration range of from about 0.5 g./l. to about 25 g./l. and (b) a sufficient amount of an alkali metal hydroxide to buffer the composition at a pH in the range of from 3 to 7, are advantageously used as a final rinse in color photographic processes to stabilize the dye images either in the presence or absence of residual color-forming coupler against the staining and/or fading effects of exposure to high temperatures, high humidity and prolonged exposure to light.

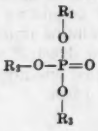
3,676,137
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT CONTAINING MAGENTA COUPLER AND ALKYL PHOSPHATE SOLVENT

Eiichi Mizuki, Yasushi Oishi, and Masao Sawahara, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Aug. 27, 1970, Ser. No. 67,330
Claims priority, application Japan, Aug. 27, 1969, 44/67,797
Int. Cl. G03c *7/00, 1/40*
U.S. Cl. 96—56.5 **20 Claims**

A light-sensitive material comprising at least a layer of a silver halide emulsion containing (1) a non-diffusing 5-pyrazolone coupler having at least a hydrophobic bal-

lasting group containing from 9 to 30 carbon atoms and (2) a coupler solvent having the formula



wherein R_1 and R_2 each is an alkyl group and wherein R_3 represents a member selected from a group consisting of an alkyl group and an aryl group, and wherein the total number of the carbon atoms in R_1, R_2 and R_3 ranges from 14 to 40 carbon atoms, is disclosed.

3,676,138

FORMATION OF DYES SUITED FOR REPRODUCTION PURPOSES

Albert Lucien Poot, Kontich, and Henri Depoorter, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,574
Claims priority, application Great Britain, Dec. 3, 1969, 59,093/69
Int. Cl. G03c *1/58, 5/22, 5/34*
U.S. Cl. 96—75 **16 Claims**

Diazo recording process giving a neutral black tone using as the coupling agent in an alkaline medium a quaternary salt of 2-methyl-5,6-dimethoxybenzothiazole or a quaternary salt of 2-methylbenzothiazole wherein the carbon atoms of the 5- and 6-position are part of a fused ring closed by a —O—CH_2—O— or a

—O—CH_2—CH_2—O—

group. Preferably the quaternary salt is substituted on the nitrogen atom of the benzthiazolium nucleus with a

—CH_2—Y

group in which Y is an electron-withdrawing group such as in a —CH_2—CO—NH—SO_2—CH_3 group; and recording materials useful therein.

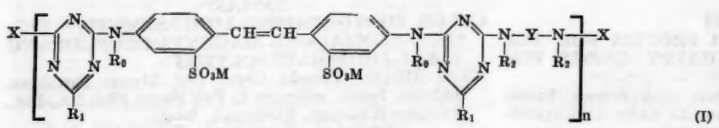
3,676,139

COLOR PHOTOGRAPHIC PRINTING PAPER

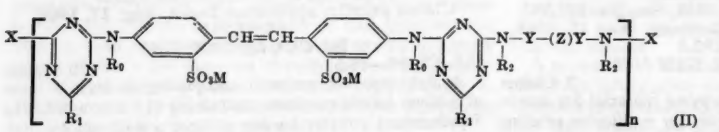
Hiroyuki Amano, Fumihiki Nishio, Nobuo Tsuji, and Kazuo Shirasu, Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha (now Fuji Photo Film Co., Ltd.), Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,846
Claims priority, application Japan, Jan. 12, 1968, 43/1,669
The portion of the term of the patent subsequent to Oct. 26, 1988, has been disclaimed
Int. Cl. G03c *1/92, 1/84*
U.S. Cl. 96—82 **9 Claims**

A color photographic printing paper containing an ultraviolet absorbent and a fluorescent brightening agent represented by the formulas



(I)



(II)

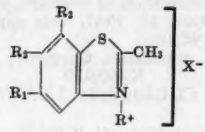
3,676,140

DIAZO RECORDING

Albert Lucien Poot, Kontich, and Henri Depoorter, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,575
Claims priority, application Great Britain, Dec. 23, 1969, 62,708/69
Int. Cl. G03c *1/58, 5/22, 5/34*
U.S. Cl. 96—91 **9 Claims**

A dry or wet diazo process giving deep colored tones using as the coupling agent a benzothiazolium compound corresponding to the following general formula:



wherein:

X^- stands for an anion, and may be missing when the anion is present in the R group,

R stands for an organic group introduced by quaternization,

R_1 stands for hydrogen, an alkyl group, a phenyl group, an alkoxy group, a halogen atom, an amino group, cyano, an alkoxycarbonyl group, an acyl group, or an alkylsulphonyl group,

R_2 stands for hydrogen, a C_2–C_5 alkyl group, an alkoxy group, cyano, cyanovinyl or a halogen atom,

R_3 stands for hydrogen, halogen, a sulpho group or a sulphamyl group, the benzene ring of the benzothiazolium nucleus carrying at least one substituent other than hydrogen and being free of a methoxy group in the 6-position; and recording materials useful therein.

A preferred benzothiazolium compound is 2,3,5,6-tetramethyl-benzothiazolium methylsulphate and a preferred diazonium compound p-diethylaminobenzene-diazonium tetraborofluoride.

3,676,141

PROCESS FOR THE PREPARATION OF COLOR-PHOTOGRAPHIC SENSITIVE MATERIALS USING NONIONIC AND ANIONIC SURFACE ACTIVE AGENTS

Hikoharu Hara, Yasushi Oishi, and Kameji Nago, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,465
Claims priority, application Japan, Aug. 22, 1968, 43/60,130
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **25 Claims**

A process for producing color-photographic sensitive material comprising a support and a silver halide emulsion carried thereon. The emulsion contains a finely dispersed color-forming coupler which has a hydrophobic

radical containing 9–28 carbon atoms. The color-photographic material is formed by dispersing the above coupler in an aqueous gelatin solution in the presence of a nonionic surface active agent obtained by the esterification of one to two hydroxyl groups in an anhydrohexitol molecule with a fatty acid containing 10 to 20 carbon atoms and an anionic surface active agent containing both a hydrophobic radical containing 8 to 30 carbon atoms and a water-solubilizing MO_3S- or MO_3SO-group wherein M represents a hydrogen atom, or an alkali metal atom or an ammonium group.

3,676,142

METHOD OF INCORPORATING PHOTOGRAPHIC INGREDIENTS INTO PHOTOGRAPHIC COLLOID COMPOSITIONS

Jan Albert Carpentier, Walem, and Alfons Jozef De Pauw, Edegem, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,825
Claims priority, application Great Britain, Sept. 10, 1968, 43,029/68
Int. Cl. B01j *13/00;* **G03c** *1/40, 1/72*
U.S. Cl. 96—100 **6 Claims**

A color-coupling or mask-forming compound is inhibited against diffusion from the layer of a color photographic material in which is in incorporated by means of a water-insoluble chemically inert wax dispersed uniformly throughout the layer and having the color-coupling or mask-forming compound in contact therewith, preferably contained in finely divided particles thereof. Any of a variety of natural or synthetic waxes can be employed, preferably having a low refractive index, and the wax and the color-coupling or mask-forming compound can be incorporated into the layer-forming composition in a variety of ways.

3,676,143

TREATMENT OF EXPOSED SILVER HALIDE EMULSION WITH ACIDIC HARDENING BATH FOLLOWING BY ALKALINE ACTIVATING BATH

Wolfgang Himmelmann, Opladen-Luetzenkirchen, Karl-Wilhelm Schranz, Opladen, and Johannes Sobel, Leverkusen, Germany, and George Frans van Veelen, Mortsel, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,403
Claims priority, application Germany, Aug. 21, 1969, P 19 42 562.8
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **4 Claims**

Exposed photographic layers particularly layers which contain color couplers, are hardened before processing by treating the exposed layer with prehardening baths, have a pH-value in the side range and which contain hardening agents.

3,676,144

EPOXIDE HARDENER IN SILVER HALIDE EMULSION LAYER AND FORMALDEHYDE AND/OR GLYOXAL HARDENER IN ADJACENT PROTECTIVE LAYER

Gunter Schulz, Holzkirchen, Wolfgang Himmelmann, Opladen-Lutzenkirchen, and August Randolph, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 2, 1970, Ser. No. 42,865
Claims priority, application Germany, June 4, 1969, P 19 28 356.8
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **1 Claim**

The process in the preparation of photographic materials of adding epoxy compounds having hardening properties to a silver halide emulsion containing gelatin, coating a base with the mixture and then coating with a protective gelatin layer containing formaldehyde or glyoxal as a hardener.

3,676,145

PREDETERMINED CHEMICAL REACTIONS IN PHOTOGRAPHIC IMAGEWISE CONFIGURATION

Thomas F. Protzman, Worthington, Ohio, assignor to A. E. Staley Manufacuring Company, Decatur, Ill.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,119
Int. Cl. G03c *1/68, 5/00*
U.S. Cl. 96—115 **23 Claims**

Process for carrying out a predetermined chemical reaction in imagewise configuration which comprises exposing an element comprising (A) a first solid layer comprising a composition capable of undergoing a predetermined chemical reaction bearing (B) a second layer comprising a composition capable of receiving a powder in image-wise configuration to actinic radiation to form a latent powder-receptive image without initiating said predetermined chemical reaction; developing said latent image with powder particles comprising a complementary reagent which, in minor proportions, exerts a major influence on the course of said predetermined chemical reaction to form a layer of powder particles in image-wise configuration; bringing said complementary reagent into reactive contact with said composition capable of undergoing said predetermined chemical reaction; and carrying out said predetermined chemical reaction in a predetermined configuration conforming to the image-wise configuration of the powder particles of said second layer.

3,676,146

CONTROLLING PREDETERMINED CHEMICAL REACTIONS IN PHOTOGRAPHIC IMAGE-WISE CONFIGURATION

Thomas F. Protzman, Worthington, Ohio, assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,121
Int. Cl. G03c *1/68, 5/00*
U.S. Cl. 96—115 **22 Claims**

Process for carrying out a predetermined chemical reaction in image-wise configuration which comprises bringing into contact (1) a first layer comprising a composition capable of undergoing a predetermined chemical reaction with a second layer bearing a layer of powder particles in image-wise configuration, said powder particles comprising a component which, in minor proportion, exerts a major influence on the course of said predetermined chemical reaction and (2) carrying out said predetermined chemical reaction in a predetermined configuration conforming to the image-wise configuration of the powder particles of said second layer.

3,676,147

METHOD OF SPECTRALLY SENSITIZING PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Simone J. Boyer and Roger Caridi, Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,944
Claims priority, application France, Dec. 24, 1968, 180,194
Int. Cl. G03c *1/16, 1/18, 1/20*
U.S. Cl. 96—130 **13 Claims**

Light sensitive silver halide is spectrally sensitized by dispersing a substantially water-insoluble photographic spectral sensitizing dye into a water-soluble organic liquid without dissolving the dye, and incorporating the dispersion into a liquid photographic silver halide emulsion. Novel dispersions of dyes are also provided.

3,676,148
EDIBLE COMESTIBLES AND PROCESS FOR MAKING SAME
Duane G. De Weese, Takoma Park, Md., and Ronald C. Hanck, Parma Heights, Ohio, assignors to SCM Corporation, Cleveland, Ohio
No Drawing. Filed May 13, 1970, Ser. No. 37,065
Int. Cl. A23l *1/00;* A22c *18/00*
U.S. Cl. 99—1 7 Claims

Set forth is an edible comestible adapted for rigid-form syneresis resisting refrigerated storage. The comestible comprises a continuous phase having a gelatin content of ½–4%, the gelatin having a bloom between about 100–300, and from about ½% to 3½% of a crumb carbohydrate thickener. The comestible preferably contains meat to form a meat sauce or it can contain no meat, but can be used for enrobing pieces of meat providing a gravy therefor. On heating to a temperature of 80° F. or higher, the continuous phase collapses to a fluent palatable liquid of sauce-like consistency.

3,676,149
TASTE-MODIFYING COMPOSITION CONTAINING MIRACULIN AND METHOD OF PREPARATION
John Richard Fennell and Robert J. Harvey, Sudbury, Mass., assignors to Meditron, Inc., Wayland, Mass.
No Drawing. Filed Apr. 15, 1970, Ser. No. 28,981
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R 15 Claims

Stable solid miraculin substantially free of components of ripe miracle fruit that degrade miraculin. The miraculin is useful in conjunction with foods such as in coatings to render sour-tasting foods sweet tasting while maintaining this taste modifying characteristic for long periods under normal atmospheric conditions. The miraculin is obtained by low temperature procesing including comminuting the ripe fruit, dehydration, and separation on a density basis.

3,676,150
LOW CALORIE YEAST LEAVENED BAKED PRODUCTS
Martin Glicksman, Valley Cottage, Elizabeth H. Farkas, Yonkers, and Sadie Carter, Ossining, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed June 1, 1970, Ser. No. 42,549
Int. Cl. A21d *13/04, 13/06*
U.S. Cl. 99—90 R 9 Claims

Low calorie, yeast leavened baked goods, including bread, are prepared from a flour comprised of gums, starch and alpha-cellulose. The sponge structure of the reduced calorie products is similar to that of wheat flour-containing baked goods.

3,676,151
TOASTER PRODUCT AND PROCESS
Rudolph K. Scharschmidt, Battle Creek, Mich., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 873,731, Nov. 25, 1969, which is a continuation of application Ser. No. 798,777, Feb. 12, 1969, which is a continuation-in-part of application Ser. No. 599,984, Dec. 7, 1966, which is a continuation-in-part of application Ser. No. 487,927, Sept. 16, 1965, which in turn is a continuation-in-part of application Ser. No. 303,169, Aug. 19, 1963, all now abandoned. This application Jan. 11, 1971, Ser. No. 105,637
Int. Cl. A21d *13/00*
U.S. Cl. 99—86 6 Claims

A toaster product has been prepared which is made up of a continuous dough crust containing a fruit filling. Apple powder is used in the fruit filling to provide bulk to the filling and to contribute to the stability of the product which is stored without refrigeration at a moisture content of 13 to 25 percent.

3,676,152
UNLEAVENED, FINE GRAIN HIGH VOLUME LAYER CAKE MIX
James B. Edwards and Warren R. Haug, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,863
Int. Cl. A21d *2/00;* A23l *1/10*
U.S. Cl. 99—94 5 Claims

An unleavened fine grained, high volume layer cake mix in which the shortening contains a high percent of alpha-phase crystal-tending emulsifiers and is free from leavening ingredients which release CO_2 gas before or during the baking process.

3,676,153
METHOD FOR PREPARING BEEF FEET PRODUCTS
Richard Sheldon, Denver, Colo., assignor to Litvak Meat Company Inc., Denver, Colo.
Filed Nov. 24, 1969, Ser. No. 879,441
Int. Cl. A22c *18/00*
U.S. Cl. 99—107 2 Claims

The process of the present invention is particularly adapted for use in the preparation of kosher or non-kosher animals' feet for human consumption involving a sequence of steps in which a plurality of feet, following preliminary preparation and cleaning, are revolved in a tumbler having spaced openings and containing a caustic solution at a preselected elevated temperature whereby to effect the complete removal of the hair and hair follicles covering the upper shank portion of the feet. The tumbler employed is characterized in that the spaced openings have relatively smooth edges which will lend some abrasive action to the hair removal process without damaging the skin.

3,676,154
SHELF STABLE TOMATO SOUP CONCENTRATE
George Glasser, Ossining, Ragnar Edward Sjonvall, East Chester, and Milton Kaplow, White Plains, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Apr. 3, 1970, Ser. No. 25,590
Int. Cl. A23l *1/40*
U.S. Cl. 99—124 4 Claims

A tomato soup concentrate is prepared with a water soluble solids content sufficient to provide microbiological stability at room temperature conditions without the need for commercial sterilization; also, the level of soluble solids prevents the soup concentrate from solidifying at home freezer temperatures (0° F. to 15° F.) and thereby effects a readily spoonable, semi-frozen consistency which lends itself to single serving dispensing and dilution with hot water to form an excellent quality soup.

3,676,155
DEXTROSE ICINGS
Harold Edwin Horn, Oak Lawn, and Bruce Allan Kimball and Martin Michael Godzicki, Chicago, Ill., assignors to CPC International Inc.
No Drawing. Filed May 22, 1970, Ser. No. 39,903
Int. Cl. A23g *3/00*
U.S. Cl. 99—139 2 Claims

Icings having improved skin forming and texture properties containing dextrose ad dextrose hydrate.

3,676,156
FLAVOR ENHANCING MATERIALS AND METHOD OF PREPARING SAME
Alan P. Bentz, Stamford, Conn., and Richard Scarpellino, Ramsey, N.J., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed May 20, 1970, Ser. No. 39,853
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R **11 Claims**

Flavor enhancing materials are prepared by reacting ammonia with carbonyl compounds in an aqueous medium. The flavor enhancing materials are stable in the aqueous medium and retain their high potency and quality when combined with an edible fixation agent and are dehydrated.

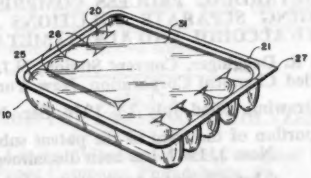
3,676,157
METHOD OF PREPARING FREEZE-THAW STABLE SPOONABLE SALAD DRESSING
Peter Wintersdorff, San Diego, Calif., assignor to Kelco Company, San Diego, Calif.
No Drawing. Filed July 16, 1970, Ser. No. 55,619
Int. Cl. A23l *1/24*
U.S. Cl. 99—144 **4 Claims**

A method of making a spoonable salad dressing containing starch, about 30 to about 70 percent of an edible oil, about 30 to about 70 percent of water, about 1 to about 3.5 percent of salt, and a Xanthomonas colloid in about 0.2 to about 0.3 percent by weight, said method comprising admixing the ingredients for the dressing including up to about 0.75 percent by weight of salt, emulsifying the mixture, and thereafter blending the balance of the salt into the emulsion.

3,676,158
METHOD OF FORMING AN ADHERENT COATING ON FOODS
Leonard G. Fischer, College Point, N.Y., and Philip Wong, Bergenfield, N.J., assignors to DCA Food Industries Inc.
No Drawing. Filed June 7, 1971, Ser. No. 150,799
Int. Cl. A23b *1/10, 7/16*
U.S. Cl. 99—166 **11 Claims**

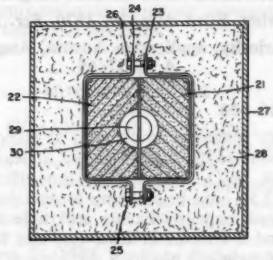
A food product having a gel-forming material on its surface is exposed to a gelation agent thereby forming a continuous skin which envelops the food product. An excess of gelation agent is employed so that a residue is left on the skin. The skin-enveloped product is then coated with a fluid batter containing a gel-forming material. The residue gelation agent and the gel-forming material within the batter react to form an additional gel structure.

3,676,159
THERMOFORMED REUSABLE PACKAGE HAVING A RECLOSABLE LID
Derek Fallowfield, Oakville, Ontario, Canada, assignor to W. R. Grace & Co., Duncan, S.C.
Filed Apr. 27, 1970, Ser. No. 32,227
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 **6 Claims**



This invention comprises a thermoformed reusable package having a reclosable lid. The package is formed to accept a set of shaped food items. The lid is also shaped to the shape of the food items except for an opaque area of the lid which carries descriptive information.

3,676,160
CARBON MATERIALS AND ARTICLES
Robert Lewis Bickerdike and Garyth Hughes, Farnham, England, assignors to National Research Development Corporation, London, England
Application Apr. 20, 1967, Ser. No. 632,277, now Patent No. 3,534,803, which is a continuation of application Ser. No. 541,975, Apr. 12, 1966. Divided and this application Jan. 27, 1970, Ser. No. 13,232
Int. Cl. B28b *7/34*
U.S. Cl. 106—38.9 **4 Claims**



A carbon casting mould for metals is provided which nas low conductivity and high thermal shock resistance. The moulds, which comprise fibrous carbon bonded with non-fibrous carbon, can be repeatedly used to cast grey iron.

3,676,161
REFRACTORIES BONDED WITH ALUMINIDES, NICKELIDES, OR TITANIDES
Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 3, 1969, Ser. No. 803,817
Int. Cl. C04b *35/70*
U.S. Cl. 106—55 **14 Claims**

Dense compositions having a grain size smaller than 10 microns and containing from 10 to 80 volume percent of a wear-resistant material selected from the group consisting of (a) aluminum nitride, (b) tantalum nitride, (c) mixtures of (a) and (b), and (d) a refractory oxide of an element selected from the group consisting of magnesium, zirconium, hafnium, titanium, chromium, beryllium, zinc, calcium, thorium, barium, strontium, silicon, the rare earth metals, and mixtures thereof; 15 to 80 volume percent of a metalline selected from the group consisting of titanium carbide, titanium nitride, zirconium carbide, zirconium nitride, tantalum carbide, niobium carbide, niobium nitride, and mixtures thereof; and 5 to 35 volume percent of an intermetallic selected from the group consisting of molybdenum nickelide, tantalum nickelide, zirconium, nickelide, niobium, nickelide, cobalt, aluminide, cobalt titanide, iron aluminide, iron titanide, nickel aluminide, nickel titanide, tungsten aluminide, molybdenum aluminide, niobium aluminide, tantalum aluminide, titanium aluminide, zirconium aluminide, and mixtures thereof are (1) effective for cutting tools for high speed machining and (2) resistant to oxidation.

3,676,162
MAGNESITE REFRACTORY MATERIALS
Ernst Mahler, Wiesbaden-Bierstadt, Germany, assignor to Didier-Werke A.G., Wiesbaden, Germany
No Drawing. Filed June 10, 1970, Ser. No. 45,243
Claims priority, application Great Britain, June 21, 1969, 31,464/69
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 **11 Claims**

In the particular embodiments of the invention described herein, a basic refractory material for lining steel

converters and the like comprises a granular mixture of sintered magnesia having 80% of the granules between 1 mm. and 10 mm., bonded together with sodium polyphosphate or magnesium sulfate, and impregnated with liquid tar.

3,676,163

REFRACTORY, FIRED MAGNESIA BRICK

Günther Lorenz Mörtl, Villach, Austria, assignor to Oesterreichisch-Amerikanische Magnesit A.G.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,701

Claims priority, application Austria, Aug. 25, 1969, A 8,117/69

Int. Cl. C04b *35/04*

U.S. Cl. 106—58 **11 Claims**

Refractory magnesia brick fired at standard temperatures of about 1650° C., containing at least 90% MgO, less than 1% Fe_2O_3, and having a lime-silica ratio (C/S) of 1.65 to 2.50, said brick being formed from over 50% coarse-grained magnesia having a particle size of at least 0.3 mm. and a C/S of at least 1.0, and less than 50% fine-grained magnesia having a particle size of at most 0.3 mm., at least 2% fine-grained magnesia with a C/S of less than 1.0 being present, and a finely ground lime-carrier, and said brick having a bonding phase containing dicalcium silicate formed in situ in the brick by reaction of said fine-grained magnesia with said finely ground lime-carrier.

3,676,164

TREATMENT OF WASTE SULFITE LIQUOR TO AVOID POLLUTION, AND METHOD OF MAKING

Harry Silby, Miami, Fla., assignor to Wire Sales Company, Chicago, Ill.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,331

Int. Cl. C04b *29/02*

U.S. Cl. 106—77 **3 Claims**

Hard briquettes suitable for use in the building arts can be formed from the waste products obtained from the treatment of waste sulfite liquor. Using lime as the treating agent, calcium sulfate is obtained as a by-product from the treatment of waste sulfite liquor from paper pulp operations. Iron oxide, mineral fillers and a suitable binder are used to make the briquettes.

3,676,165

SAND-LIME BRICKS AND PROCESS FOR MAKING THEM

Alfred Schneider-Arnoldi, Krefeld, Friedrich-Wilhelm Kampmann, Liblar, Hans-Dieter Thiel, Hurth, near Cologne, Joachim Kandler, Lechenich, and Dietrich Gleisberg, Hurth, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,333

Claims priority, application Germany, Apr. 23, 1969, P 19 20 488.7

Int. Cl. C04b *7/20*

U.S. Cl. 106—117 **4 Claims**

Novel sand-lime bricks consisting substantially of sand and between 6 and 15 weight percent of a binder. Between 5 and 95 weight percent of the binder is phosphorus furnace slag and the balance is burnt lime or lime hydrate.

3,676,166

PLASTICIZED SULFUR COMPOSITIONS

Rector P. Louthan, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,210

Int. Cl. C09d *1/00*

U.S. Cl. 106—241 **21 Claims**

The color stability of plasticized sulfur-containing compositions is improved by the addition of a viscosity control agent selected from the group consisting of 1,2,4-trichlorobenzene; biphenyl; naphthalene; o-dichlorobenzene; p-dichlorobenzene or xylene.

3,676,167

RUTILE TITANIUM DIOXIDE PIGMENT FOR PAPER LAMINATES

Alfred John Werner, Newport, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 14, 1970, Ser. No. 63,922

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **2 Claims**

In a process of treating rutile titanium dioxide pigment by (a) mixing titanium dioxide and a silicate in water forming a slurry; (b) neutralizing the slurry to obtain a pH value of about 5–8, at a temperature of about 50–70° C.; (c) adding a soluble zinc salt to the mixture and adjusting the pH of the mixture to a level of about 6.5–7.5; (d) isolating the treated pigment from the mixture; (e) calcining the isolated pigment; and (f) dry-grinding the calcined pigment, the light stability of the pigment and the ability of the pigment to be retained by paper pulp in the manufacture of paper is improved by rapidly adding sulfuric acid having a concentration of 50–96 percent to the slurry of pigment and silicate, reducing the pH of the slurry to a value of 5 or less and effecting rapid precipitation of silica.

3,676,168

CARBON BLACK MANUFACTURE

Robert E. Dollinger, Toledo, Ohio, assignor to Phillips Petroleum Company

No Drawing. Filed May 14, 1970, Ser. No. 37,338

Int. Cl. C08h *17/08;* C09c *1/58*

U.S. Cl. 106—307 **10 Claims**

A method of improving the scorch time of rubber into which carbon black is blended by incorporating into the carbon black an antioxidant by mixing the antioxidant and carbon black in contact with water and oxidatively drying the carbon black.

3,676,169

FIRE RETARDING PROCESS COMPRISING CONVERGING SEPARATE SOLUTIONS OF POLYVINYL ALCOHOL AND ALKALI METAL BORATE

Edward R. Degginger, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 23, 1970, Ser. No. 59,778

The portion of the term of the patent subsequent to Nov. 3, 1987, has been disclaimed

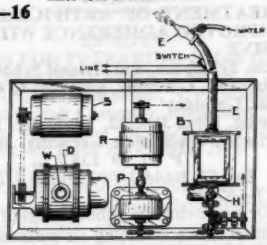
Int. Cl. A01n *3/00;* C09d *5/18*

U.S. Cl. 117—3 **7 Claims**

An aqueous solution of polyvinyl alcohol and an aqueous solution of an alkali metal borate, when combined, form a dilatant fluid having excellent properties as a fire retardant and fire suppressant.

3,676,170
METHOD FOR SPRAYING A HIGH DENSITY INSULATING MAT

Richard Lewis Kempthorne, Miami, Fla., assignor to Sprayon Research Corporation, Fort Lauderdale, Fla.
Continuation-in-part of application Ser. No. 658,012, June 19, 1967. This application Mar. 30, 1970, Ser. No. 23,970
Int. Cl. B44c *1/08*
U.S. Cl. 117—16 3 Claims



The apparatus and method for applying a high density, fibrous insulating mat surface which requires no tamping. A blower and nozzle arrangement to mix and spray the fibrous material in an extremely high velocity impact stream.

3,676,171
POLYVINYL CHLORIDE POWDER COATINGS

Lester L. Spiller and Claude W. Buford, Indianapolis, Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,061
Int. Cl. B44d *1/094;* B05b *5/00*
U.S. Cl. 117—17 22 Claims

Polyvinyl chloride homopolymer powder which is substantially free of copolymerizable monomers which will soften the polymer or increase its solubility in organic solvents so that it does not fuse to form a film when heated in the absence of pressure is fused and coalesced into a continuous non-porous film by subjecting a layer of the powder on a substrate to organic solvent vapor having a temperature in excess of 100° C. while condensing the solvent vapors on the substrate until the film is formed.

3,676,172
VAPOR COALESCENCE OF POWDER COATINGS

John W. Van Dyk, Wilmington, Del., and Dao-Tsing Wu, Villanova, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 733,275, May 31, 1968. This application Dec. 14, 1970, Ser. No. 98,131
Int. Cl. B44d *1/48, 1/094*
U.S. Cl. 117—21 17 Claims

The process for forming a continuous polymeric coating on a substrate comprises the following steps:

(1) applying a coating of a thermoplastic polymeric powder on a substrate,
(2) exposing the coating to a partial pressure of a coalescing vapor for the polymeric powder, and
(3) absorbing sufficient vapor into the coating to coalesce the powder particles and heating the coalesced coating to remove solvent.

3,676,173
METHOD FOR FORMING PYROLYZED STRUCTURES

Whitney R. Adams, Wilmington, Del., assignor to Scott Paper Company, Philadelphia, Pa.
Continuation of application Ser. No. 485,893, Sept. 8, 1965. This application Apr. 10, 1969, Ser. No. 858,210
Int. Cl. C23c *9/06*
U.S. Cl. 117—21 9 Claims

Porous, cellular structures which have been at least partially carbonized, which have greater strength at high temperatures, and which are capable of withstanding higher temperatures than could the structures prior to pyrolysis. A method for forming the above structures in which a first basic structure having a desired configuration and comprised of material having a low fusion or deterioration temperature is coated at even lower temperatures with an infusible resin which is capable of being cured to an infusible state at a temperature lower than the fusion or deterioration temperature of the material comprising the first basic structure, and the resulting coated structure, is then subjected to elevated temperatures so that the basic structure is pyrolyzed and carbonized leaving a stronger, high-temperature-resistant structure substantially in the image of the first basic structure.

3,676,174
COATING AND FORMING

Herman Spector, 75 Central Park W., New York, N.Y. 10023
No Drawing. Continuation-in-part of application Ser. No. 698,707, Jan. 18, 1968, now Patent No. 3,558,340. This application Nov. 16, 1970, Ser. No. 90,161
The portion of the term of the patent subsequent to Jan. 26, 1988, has been disclaimed
Int. Cl. B44c *1/06;* B44d *1/094*
U.S. Cl. 117—26 7 Claims

Formed objects are given a hard coat by rubbing a dry powder and plaster of Paris thereon, painting the surface with a mixture of this powder and polyvinyl acetate, and allowing the painted surface to cure. The powder may be wood flour or microporous cellulose. If desired, a metallic coating may be provided by further painting on a coating of a fine metal powder suspended in polyvinyl acetate. The mixture itself of powder, plaster of Paris and polyvinyl acetate may be shaped or moulded into the form of useful or decorative objects.

3,676,175
PAPER COATED WITH PIGMENTED RESIN AND OPTICAL BRIGHTENING AGENT

Anthony Ian Woodward, Amersham, and Angus John Challis Purdie, Maidenhead, England, assignors to Wiggins Teape Research & Development Limited, London, England
No Drawing. Filed June 17, 1970, Ser. No. 46,884
Claims priority, application Great Britain, June 23, 1969, 31,654/69
Int. Cl. G03c *1/86, 1/92*
U.S. Cl. 117—33.5 T 4 Claims

A synthetic resin composition which contains antimony trioxide and an optical brightening agent for the production of photograph support materials. The composition is used in sheet form or coated on to a base of paper or board. The synthetic resin composition surface can be sensitized with a photograph emulsion or coated with silver precipitation nuclei.

3,676,176
METHOD OF MAKING FLUORESCENT LAMPS

Willy P. Schreurs, Danvers, and Lawrence W. Kimball, Bedford, Mass., assignors to Sylvania Electric Products Inc.
No Drawing. Filed Sept. 28, 1970, Ser. No. 76,270
Int. Cl. F21k *2/00;* B44d *1/46, 1/48*
U.S. Cl. 117—33.5 L 7 Claims

The inner wall of a tabular, open-ended glass envelope is coated with a phosphor by flushing a liquid phosphor suspension therethrough. In order to improve the uniformity of thickness of the phosphor, the envelope is positioned vertically and the wet phosphor is zone dried while air is passed through the envelope.

3,676,177

METHOD OF STABILIZING RARE EARTH OXIDE PHOSPHOR IN DICHROMATE SENSITIZED COATING SLURRY

Michael J. Hammond and James W. Haynes, Towanda, Pa., assignors to Sylvania Electric Products Inc.

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,771
Int. Cl. H01j *31/00*
U.S. Cl. 117—33.5 CM 12 Claims

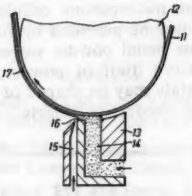
The hydrolysis of rare-earth oxide phosphors contained in a slurry of an organic binder sensitized with a dichromate ion can be prevented by treating the phosphor or the slurry with a water soluble PO_4^{-3} containing compound prior to the application of the slurry to a substrate.

3,676,178

PROCESS AND APPARATUS FOR COATING WEB SUPPORTS

Kurt Browatzki, Opladen, Hans Gref, Cologne, Peter Herzhoff, Leverkusen, Fritz Maus, Cologne, and Stephan Platz, Gustav Schaum, Wolfgang Schweicher, and Willi Wasser, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 17, 1970, Ser. No. 20,227
Claims priority, application Germany, Apr. 25, 1969, P 19 21 644.7
Int. Cl. C23c *13/08*
U.S. Cl. 117—34 2 Claims



A process for coating web supports with viscous solutions in which the solution is applied to the web support from a coating chamber through a narrow gap between the exit side of the chamber and the support, the gap opening being several times larger than the thickness of the applied solution layer. An adjustable gas pressure in excess of atmospheric pressure is applied against the coating solutions directly adjacent the outer side of the coating chamber while maintaining atmospheric pressure on the entry side of the coating chamber.

3,676,179

COATED ARTICLE AND METHOD FOR MAKING SAME

Jack C. Bokros, San Diego, Calif., assignor to Gulf Oil Corporation, San Diego, Calif.

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,954
Int. Cl. C23c *11/10;* B44d *1/12*
U.S. Cl. 117—46 CG 15 Claims

A method of coating with pyrolytic carbon to provide a coated article having high strength characteristics. Deposition of pyrolytic carbon is effected on an article from a carbonaceous atmosphere at a preselected temperature under conditions that result in formation of carbon having a preselected coefficient of thermal expansion which is less than that of the article. During cooling of the coated article to ambient temperature, the difference between the coefficients of thermal expansion of the article and the pyrolytic carbon causes the pyrolytic carbon coating to be placed under substantial compressive tangential stress. Deposition is usually carried out at a temperature of about 1500° C. or below to deposit fairly dense isotropic or laminar carbon. The coefficient of thermal expansion of the article being coated is usually between about 6 to 9×10^{-6}/° C., with the preferred material being graphite.

3,676,180

ACID TREATMENT OF ARTIFICIAL LEATHER FOR IMPROVED ADHERENCE WITH A LATEX ADHESIVE

Werner Riess, Erlenbach, and Helmut Schaefer and Bernd Bayer, Elsenfeld, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed Jan. 22, 1969, Ser. No. 793,159
Claims priority, application Germany, Jan. 23, 1968, P 17 19 138.7
Int. Cl. B44d *1/092;* D06n *3/00*
U.S. Cl. 117—47 A 11 Claims

Process for improving the adhesiveness of a microporous artificial leather while retaining its permeability to water vapor, particularly as a pretreatment step in adhering the artificial leather with an aqueous latex adhesive, by treating said leather as a substrate with an aqueous solution of a weakly acidic electrolyte in an amount sufficient to yield a pH-value on the surface of the artificial leather of from about 2 up to less than 7.

3,676,181

ELECTRICAL DISCHARGE TREATMENT OF TETRAFLUOROETHYLENE/HEXAFLUOROPROPYLENE COPOLYMER IN ACETONE

Alexander Joseph Kowalewski, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,497
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A 5 Claims

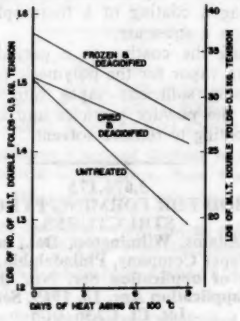
Treatment of tetrafluoroethylene/hexafluoropropylene copolymer surface by electrical discharge in an atmosphere containing 3 to 40% by volume of acetone to render the surface more adherable to another material.

3,676,182

TREATMENT OF CELLULOSIC MATERIALS

Richard Daniel Smith, 1369 E. Hyde Park Blvd., Chicago, Ill. 60615

Continuation-in-part of applications Ser. No. 559,415, June 22, 1966, Ser. No. 695,631, Jan. 4, 1968, and Ser. No. 850,991, Aug. 18, 1969. This application Aug. 31, 1970, Ser. No. 68,499
Int. Cl. B44d *1/092*
U.S. Cl. 117—60 47 Claims


FROZEN & DEACIDIFIED
DRIED & DEACIDIFIED
UNTREATED
LOG OF NO. OF M.I.T. DOUBLE FOLDS-0.5 KG. TENSION
LOG OF M.I.T. DOUBLE FOLDS-0.5 KG. TENSION
DAYS OF HEAT AGING AT 100 °C

A non-aqueous process for deacidifying and preserving cellulosic materials by means of a solution of an alkali

or alkaline earth alkoxide, or mixtures thereof, in an organic solvent therefor. Also disclosed are nonaqueous deacidification processes employing other alkali and alkaline earth compounds, and processes which employ a liquefied gas and/or halogenated hydrocarbon solvent. Also disclosed are processes for deacidifying and preserving cellulosic aggregates such as whole books, and cellulosic plastics.

3,676,183

PROCESS FOR PREPARING HIGH GLOSS PHOTOGRAPHIC PAPER

Leonid G. Garth, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 30, 1970, Ser. No. 51,358
Int. Cl. B44d *1/44*; G03c *1/30*
U.S. Cl. 117—64 R **2 Claims**

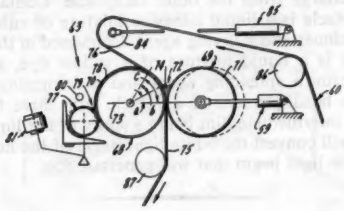
Photographic paper base is coated with a mixture of gelatin, barium sulfate and a gelatin hardener, dried, coated with an alkaline gelatin solution, dried, sprayed with an alkaline formaldehyde solution and dried in contact with a highly polished heated metal drum to obtain a high gloss finish.

3,676,184

METHOD FOR CONTROLLING VARYING LIQUID PENETRATION OF A CONTINUOUS PAPER WEB

Walter E. Spearin and Harold S. Vanderhei, Roaring Spring, Pa., assignors to Combined Paper Mills, Inc., Combined Locks, Wis.

Filed Aug. 22, 1969, Ser. No. 852,426
Int. Cl. B05c *9/04*
U.S. Cl. 117—68 **4 Claims**



A method for controlling coating liquid penetration into the substrate of a continuous web which includes application of a barrier liquid to the first side of the web prior to the time the coating liquid is applied to the second side of the web.

3,676,185

HEAT-SEALABLE MOISTUREPROOF WRAPPING MATERIAL

Cyril Howard Phillips, James Charles Brunton, and Geoffrey Downing Pearce, Bridgwater, England, assignors to British Cellophane Limited, Bridgwater, England

No Drawing. Filed Mar. 12, 1970, Ser. No. 19,095
Claims priority, application Great Britain, Mar. 13, 1969, 13,278/69
Int. Cl. B44d *1/02*; B32b *23/08, 27/08*
U.S. Cl. 117—68.5 **9 Claims**

The invention relates to heat-sealable moistureproof sheet materials. A base sheet is coated on each side with a sub-coating of a vinylidene chloride copolymer having a vinylidene chloride content of from 93 to 96% by weight and having a sum total weight of coating on both sides of the sheet of from 2.0 to 10.0 grams per square metre. The sub-coating is overlain with a top coating comprising a vinylidene chloride copolymer having a vinylidene chloride content of from 80 to 92% by weight and having a sum total weight of top coating on both sides of the sheet of from 1.0 to 5.0 grams per square metre. The sheet materials are useful as wrapping materials.

3,676,186

SOIL RETARDANT COATING AND METHOD FOR FORMING THE SAME

Louis L. Pytlewski, Philadelphia, Pa., assignor to Research Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 591,717, Nov. 3, 1966. This application Sept. 11, 1970, Ser. No. 71,426
Int. Cl. B44d *1/14*; B05b *5/00*; C03c *23/00*
U.S. Cl. 117—69 **12 Claims**

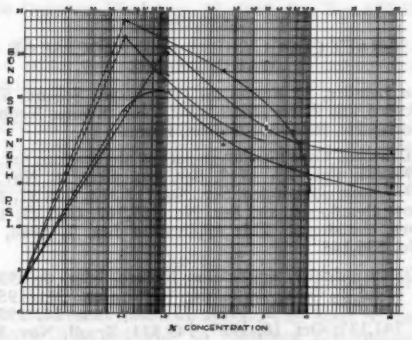
Positively charged coatings are provided comprised of positively charged particles of a salt of a metal, the metallic element of which exhibits two stable states of oxidation simultaneously while in solution. The coatings may further have an additional layer of negatively charged silica particles over the positively charged coatings. The coatings of this invention are substantive to negatively charged surfaces such as glass and are also hydrophilic. When water strikes the coated surface, there is a preferential wetting out and removal of soils from the surface. The coatings of this composition are especially useful as soil retardant coatings for window glass and other negatively charged surfaces such as textiles, metals, painted surfaces, plastic and the like.

3,676,187

BRICK TREATMENT

Leo Kampf, 39—67 48th St., Sunnyside, N.Y. 11104

Filed May 18, 1970, Ser. No. 38,386
Int. Cl. B44d *1/02*
U.S. Cl. 117—70 A **8 Claims**



The application to the mortar surface of brick of a water repellant material at a concentration in the range of about 0.5% to less than 5%, with a preferred concentration of 1%.

3,676,188

METHOD FOR PREPARING SENSORS FOR DETECTING REDUCING VAPORS

Herbert P. Silverman, Orange, and Gino A. Giarrusso, Long Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Original application Aug. 23, 1967, Ser. No. 662,688, now Patent No. 3,549,329, dated Dec. 22, 1970. Divided and this application Aug. 24, 1970, Ser. No. 66,571
Int. Cl. B44d *1/06, 1/14*
U.S. Cl. 117—71 R **2 Claims**

A thin film of one of the noble metals bonded to a non-corrodible backing and having a reducible metallic

salt on at least a portion of the metal film, the salt being adapted to deposit its metal on the metal film when the salt is exposed to reducing vapors.

3,676,189

METHOD OF COATING A POLYOLEFIN OR POLYOLEFIN-COATED PAPER SHEET MATERIAL

Anthony Ian Woodward, Amersham, Angus John Challis Purdie, Maidenhead, and Anthony Paul Way, Chesham, England, assignors to Wiggins Teape Research & Development Limited, London, England

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,160

Claims priority, application Great Britain, Aug. 22, 1969, 42,069/69

Int. Cl. G03c *1/86;* **B44d** *5/04*

U.S. Cl. 117—76 P **4 Claims**

The invention concerns a polyolefin surface treated with a coating of an acidic composition which comprises aqueous silica sol, an acid stable water insoluble film forming material, surface agents to keep the film forming material as a stable suspension in the composition, and an acid. The composition is coated onto the polyolefin as an aqueous composition and dried. The treatment renders the polyolefin surface adherent to, for example, photograph emulsion, printing inks and adhesives.

3,676,190

GRAFT COPOLYMERS AND PROCESS OF MAKING SAME

Yvan Landler, 12 Boulevard Desgranges, Sceaux, Seine, France, and Pierre Henri Lebel, 290A Avenue Napoleon Bonaparte, Reuil-Malmaison, France

No Drawing. Continuation-in-part of applications Ser. No. 490,108, Feb. 23, 1955, Ser. No. 697,773, Nov. 27, 1957, now abandoned, Ser. No. 712,322, Jan. 31, 1958, now abandoned, and Ser. No. 767,767, Oct. 17, 1958, now abandoned. This application Jan. 7, 1964, Ser. No. 336,145

Claims priority, application France, Mar. 3, 1954, 664,578; Nov. 24, 1956, 9,995; Jan. 31, 1957, 730,947; Feb. 2, 1957, 731,050; June 14, 1957, 741,122; Oct. 18, 1957, 749,811; Brazil, Nov. 14, 1957, 60,876

Int. Cl. C08f *15/00, 21/00*

U.S. Cl. 117—76 **36 Claims**

A process for making substantially pure graft polymers comprises the steps of subjecting an organic polymer having a molecular weight of at least 1500 to the action of ozone at a temperature not exceeding 130° C. to form an ozonized polymer and then reacting the ozonized polymer with at least one polymerizable ethylenically unsaturated monomer to form a graft copolymer, the ozonized polymer being the sole added grafting catalyst and the graft copolymer containing at least 5% polymer substrate. The monomer may be in vapor form. The process may, if desired, be applied to shaped objects so as to form a graft copolymer only at the surface of the object. In this event, the polymer is shaped into the form of the desired polymeric object at least prior to reacting the ozonized polymer with the ethylenically unsaturated monomer. There is also disclosed a process for modifying linear polyesters free from aliphatic unsaturation and having linking groups characterized by the presence of at least one hetero atom in the chain, comprising treating such polyesters with ozone and then with a fluid organic compound containing carbon-to-carbon aliphatic ethylenic unsaturation. The resulting products are also disclosed.

3,676,191

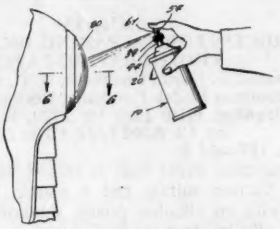
METHOD OF COATING A VEHICLE HEADLIGHT LENS

Leo H. Bond, P.O. Box 409, Norfolk, N.Y. 13667

Filed Dec. 22, 1969, Ser. No. 886,906

Int. Cl. B44d *1/14;* **C03c** *17/32*

U.S. Cl. 117—77 **2 Claims**



A spray applicator of the aerosol container type having two separate receptacles therein and a two-way rotatable valve structure including a finger depressible plunger nozzle. Separate passages connect each receptacle with the rotatable valve structure which when rotated in one selected position and depression of the plunger nozzle that opens a valve in the valve structure will provide for the flow of a pressurized liquid from one receptacle through one passage through the valve structure for discharge as a spray from the plunger nozzle. Rotation of the valve structure to another selected position will effect a like spray discharge from the other receptacle. Contained in one receptacle is a liquid adhesive mixture of rubber cement, a thinner and a drying agent. Contained in the other receptacle is a liquid mixture of a yellow dye, a water soluble resin, a spreading agent and a deforming agent. Coating a headlight lens of a vehicle with three films of spray the intermediate film being a spray of the liquid dye mixture will convert the white light beam of the headlight to a yellow light beam that will penetrate fog.

3,676,192

CROSSLINKED POLYVINYL CHLORIDE OR POLYVINYLIDENE FLUORIDE FILM

Ernest A. Hahn, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,086

Int. Cl. B44d *1/50;* **C08f** *1/24*

U.S. Cl. 117—93.31 **22 Claims**

Coating compositions comprising polyvinyl chloride or polyvinylidene fluoride are prepared by mixing a solution of the polyvinyl chloride or polyvinylidene fluoride in an active solvent with an acrylic monomer and subjecting the mixture to ionizing irradiation. The cured films are hard, stain-resistant, heat-resistant, and mar-resistant.

3,676,193

PROCESS FOR CASTING INTEGRALLY SUPPORTED TUBULAR MEMBRANES

William W. Cooper IV, Sudbury, and Edward M. Shea, Stoneham, Mass., assignors to Abcor, Inc., Cambridge, Mass.

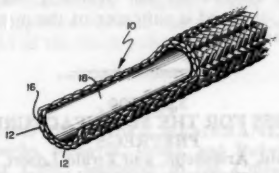
Continuation-in-part of application Ser. No. 658,166, Aug. 3, 1967. This application May 8, 1970, Ser. No. 35,646

Int. Cl. B01d *25/08;* **B44d** *1/02*

U.S. Cl. 117—94 **27 Claims**

An apparatus for and method of forming an integrally supported tubular membrane having an inner micropor-

ous layer by casting on an interior supporting surface a liquid polymeric composition. Polymeric compositions are applied to the interior of a tubular structure by means of a casting bob which is generally tear-dropped in shape



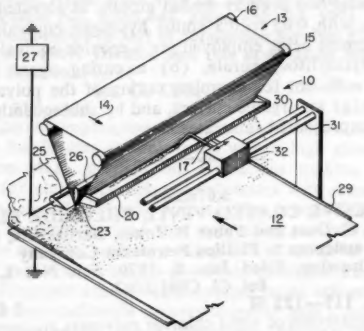
and which is hollow to receive the polymer composition and further which is characterized by apertures in the sides from which the polymeric composition is discharged from the bob onto the adjacent surface.

3,676,194

METHOD OF ELECTROSTATIC SPRAYING

Richard O. Probst, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Aug. 5, 1970, Ser. No. 61,308
Int. Cl. B05b *5/02*
U.S. Cl. 117—93.4 R **12 Claims**



An apparatus for and a method of providing charged particles of an organoplastic material including but not limited to a polymeric organoplastic foam. The organoplastic material may be used as backing or a myriad of substrate materials including but not limited to nonconductive substrate materials such as woven and nonwoven fiber webs and conductive metallic substrate materials such as aluminum and steel.

The apparatus for providing the charged particles includes an electrically insulative belt having a surface upon which the organoplastic material is placed and transported to an electrical charging and atomizing zone. Positioned within the charging and atomizing zone is means having an extended or elongated edge at high electrical potential. The extended edge is so positioned as to be substantially transverse of and in close proximity with the surface of the insulative means transporting the organoplastic material. A high intensity electric field extends from the extended edge to, or in some instances, through the substrate if the substrate is porous and fabricated from an insulative rather than a conductive material. The position of the extended edge at high electrical potential relative to the organoplastic material causes the organoplastic material to be formed into charged particles that are projected toward and deposited upon the substrate.

3,676,195

WATER-RESISTANT MATERIALS, AND METHODS OF PRODUCTION AND USE OF SAME

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967, which is a continuation-in-part of application Ser. No. 567,841, July 26, 1966. This application July 29, 1969, Ser. No. 845,908
Int. Cl. B44d *1/50;* **C08f** *1/18*
U.S. Cl. 117—93.31 **32 Claims**

Water-resistant materials having improved electrical and mechanical properties can be produced from an element which includes a liquid photocurable composition absorbed into and onto a porous support layer. The process includes, for example, impregnating a porous support layer with a liquid photocurable composition and exposing the photocurable element to U.V., electron beam or gamma radiation. The support layer containing the photocured composition is water-resistant and has improved properties. The liquid photocurable composition contains at least a polyene, a polythiol, and optionally a photocuring rate accelerator. The products, for example, can be used as water-proofed fabrics, or composite structures.

3,676,196

COATING FOR WATER CONTAINING HYDRAULIC CEMENT ARTICLES

Stephen Mark Quint, Basking Ridge, and John Junior Dalton, East Whitehouse, N.J., assignors to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,436
Int. Cl. B44d *1/20*
U.S. Cl. 117—96 **5 Claims**

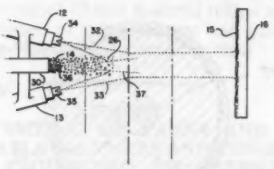
An article constructed of hydraulic calcareous cement material, such as pipe, having a coating on its water containing surfaces composed of a resin copolymer of vinyl toluene and alpha methyl styrene to inhibit dissolving and leaching of water soluble minerals from the cementitious material, and a method of applying the resin coating comprising the use of the resin dissolved in perchloroethylene.

3,676,197

METHOD OF PROJECTING PLURAL COMPONENT MATERIAL UPON A SUITABLE BASE

David Harrison, Fort Lauderdale, and Raul T. Sainz, Miami, Fla., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

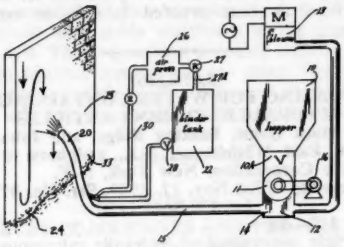
Filed Apr. 27, 1970, Ser. No. 32,064
Int. Cl. B44d *1/12, 1/08*
U.S. Cl. 117—105.5 **13 Claims**



An apparatus for and a method of providing a mixed spray of a plural component material and curing agent with granular material entrained in the mixed spray. The apparatus includes curing agent spray means, outboard plural component material spray means flanking the curing agent spray means and granular material dispensing or emitting means The outboard spray means includes a plurality of spaced apart spray nozzle means inclined toward each other so as to provide converging sprays of

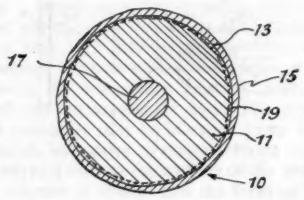
the plural component material. The sprays are adapted to converge and intersect externally of the apparatus prior to deposition upon a surface. The curing agent spray means provides a spray of curing agent which intersects and mixes with the sprays of the plural component material. Granular material entrained in a fluid medium mixes with the sprays of plural component materials so as to provide a mixed spray of plural component material and curing agent with granular material entrained therein.

3,676,198
METHOD FOR WATERPROOFING STRUCTURES
Bryan M. McGroarty, Minneapolis, Minn., assignor of a fractional part interest to Wesley R. Green, Prior Lake, Minn.
Continuation-in-part of application Ser. No. 751,517, Aug. 9, 1968. This application May 11, 1970, Ser. No. 36,296
Int. Cl. B44d *1/12, 1/08*
U.S. Cl. 117—105.5 **28 Claims**



Applying granular non-hydrated bentonite to surfaces to be waterproofed by mixing it with a material causing the granular bentonite to adhere to the surface. Upon being wetted by water, the bentonite will expand to seal the surface for an indefinite period.

3,676,199
FABRIC CONDITIONING ARTICLE AND USE THEREOF
Gordon Trent Hewitt, Upper Montclair, and Annie Sue Giordano, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 20, 1970, Ser. No. 82,368
Int. Cl. B44d *1/46, 1/48;* **B05c** *11/12*
U.S. Cl. 117—109 **13 Claims**



A method of treating fibrous materials with a conditioning agent includes tumbling such materials, in a damp and/or heated state, into contact with a form-retaining conditioning article containing a conditioning agent on a surface thereof. Such article is a form-retaining base, e.g., a polystyrene foam sphere, having a conditioning coating on the exterior thereof which is removable upon contact with tumbling laundry in the dryer, and is transferable to the laundry by such contact.

By means of the conditioning treatment, various desirable properties can be imparted to laundry or other fabrics being conditioned but generally the most important effect obtained is softening of the materials and/or making them antistatic.

3,676,200
PROCESS FOR THE MANUFACTURE OF PREPREGS
Heinz Rembold, Arlesheim, and Ewald Losert, Birsfelden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed July 2, 1970, Ser. No. 52,106
Claims priority, application Switzerland, July 7, 1969, 10,354/69
Int. Cl. C08g *30/14;* **C03c** *25/02*
U.S. Cl. 117—121 **11 Claims**

Process for the manufacture of prepregs from preimpregnated endless filaments, hanks, rovings, mats, knitted fabrics or woven fabrics based on inorganic fibre materials of high mechanical performance, or highly heat-resistant organic fibres, by impregnating the substrate with a solution containing (a) a curable polyadduct, still containing free glycidyl groups, of triglycidylisocyanurate and a less than equivalent amount of curing agent, which is obtained by reacting triglycidylisocyanurate with cycloaliphatic, aromatic or heterocyclic polyamines which contain at least two primary amino groups, at elevated temperature, with 0.05 to 0.5 amine hydrogen equivalent of the polyamine being employed per 1 epoxide equivalent of the triglycidylisocyanurate, (b) a curing agent in an amount sufficient for complete curing of the polyadduct (a) and (c) an organic solvent, and by subsequently drying the impregnated substrates.

3,676,201
ADHESIVE COATED VINYL CHLORIDE FILM
Richard C. Doss and Faber B. Jones, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Jan. 8, 1970, Ser. No. 1,537
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 H **3 Claims**

Film materials of vinyl chloride polymers are contacted with a dry-film forming, heat-activatable solution of adhesive material comprising the reaction product of an essentially linear essentially dihydroxy polyester and a diisocyanate.

3,676,202
PRESSURE-SENSITIVE ADHESIVE TAPE
Ralf Korpman, East Brunswick, N.J., assignor to Johnson & Johnson
Continuation-in-part of application Ser. No. 720,811, Apr. 12, 1968. This application Oct. 7, 1969, Ser. No. 864,512
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 P **7 Claims**

A normally tacky and pressure-sensitive adhesive tape having superior properties, wherein the adhesive is based upon the combination of a particular type of elastomeric and thermoplastic block polymer with a tackifier com-

prising a major proportion of polymerized piperylene or isoprene and piperylene structures. The block polymer has the structure ABA, wherein A is a thermoplastic polymer block of a vinyl arene and possesses a glass transition temperature above normal room temperature and B is an elastomeric polymer block of isoprene, and the thermoplastic A block composes about 8–35 percent by weight of the block polymer.

3,676,203
SEMIPERMEABLE MEMBRANES

Samuel B. Sachs, Rehovot, Israel, and Robert L. Riley, San Diego, Calif., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,177
Int. Cl. B32b *27/06*
U.S. Cl. 117—123 D **3 Claims**

Semipermeable composite membranes are prepared by coating polyacrylic acid on a porous support. The resulting membranes exhibit superior salt rejecting capability and find particular utility in desalination of water by reverse osmosis.

3,676,204
COMPOSITION AND PROCESS FOR GLAZING CERAMIC WARE

Richard Andrew Eppler, Timonium, Md., assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Application May 28, 1969, Ser. No. 828,783, now Patent No. 3,565,644, dated Feb. 23, 1971, which is a continuation-in-part of application Ser. No. 625,000, Mar. 22, 1967. Divided and this application Sept. 25, 1970, Ser. No. 75,710
Int. Cl. C03c *25/00*
U.S. Cl. 117—125 **4 Claims**

This patent application describes a method and composition for blazing ceramic ware with a high gloss, low expansion glaze, preparations useful for making same, process for glazing bodies and substrates with same, and resulting coated ceramic bodies. The composition for glazing is characterized by containing a particulate vitrifiable material, at least a substantial fraction of which is in the particulate vitreous state, said vitrifiable material, after melting into a fluent vitreous state, being self-nucleating or autocrystallizable or crystallizable into a substantially dimensionally stable continuous vitreous film in which are dispersed crystals of low thermal expansion. The glazing composition is particularly suited for glazing low expansion ceramic whiteware. Set forth as useful preparations are special particulate lithium aluminosilicates modified with flux in proportion controlled to restrict the development of a primary low thermal expansion crystalline phase, some of said preparations being modified with zirconia. The percentage of B_2O_3 and K_2O as flux components is critical to the development of high gloss glazes with high ratios of combined B_2O_3 and K_2O resulting in high gloss. The glazing process comprises partially coating a ceramic body with the composition for glazing, firing the coated body at a temperature sufficiently high and for a time sufficiently long for converting the composition into a fluent continuous vitreous surface coating, then adjusting the temperature to a value at which crystal growth in the surface coating occurs at a measurable rate, and finally cooling the resultant glazed ware at a rate consistent with keeping the ware integral. The invention shows particular advantage for making high gloss glazes of adjustable and low thermal expansion for thermal shock and mechanical shock resistant ceramic whiteware, for example, dinnerware, cookware, ceramic tile, acoustical tiles of the mineral type, sanitary ware, artware, and electrical and technical porcelain. The invention is especially adaptable to conventional "two-fire" glazing practice.

3,676,205
TEXTILE TREATMENT WITH AMPHOTERIC STARCH

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa

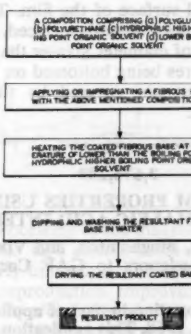
No Drawing. Continuation-in-part of applications Ser. No. 597,561, Nov. 29, 1966, and Ser. No. 816,100, Apr. 14, 1969, now Patent No. 3,622,563, dated Nov. 23, 1971. This application Feb. 13, 1970, Ser. No. 11,300
Int. Cl. C08j *1/44;* **D06m** *15/16*
U.S. Cl. 117—139.5 C **8 Claims**

Amphoteric starch which contains both cationic and anionic groups linked to the starch molecule is used in the textile industry, especially for sizing mixed fibers in the form of threads or yarns such as, for example, mixtures of polyester fibers and cotton fibers. The amphoteric starch has an isoelectric pH and can be dyed with acid dyes at a pH below the isoelectric pH and with basic dyes at a pH above the isoelectric pH. It can therefore be used to alter the dyeing properties of material to which it is applied.

3,676,206
POROUS COATED FIBROUS MATERIAL

Kazuo Nishitani, Kainan, and Yasuhiro Shiga and Yoshifumi Nishibayashi, Osaka-fu, Japan, assignors to Toyo Cloth Co., Ltd.

Filed June 27, 1969, Ser. No. 837,184
Claims priority, application Japan, July 2, 1968, 43/46,134
Int. Cl. C08c *17/08*
U.S. Cl. 117—140 A **10 Claims**


A COMPOSITION COMPRISING (a) POLYGLUTAMATE (b) POLYURETHANE (c) HYDROPHILIC HIGHER BOILING POINT ORGANIC SOLVENT (d) LOWER BOILING POINT ORGANIC SOLVENT
APPLYING OR IMPREGNATING A FIBROUS BASE WITH THE ABOVE MENTIONED COMPOSITION
HEATING THE COATED FIBROUS BASE AT A TEMPERATURE OF LOWER THAN THE BOILING POINT OF HYDROPHILIC HIGHER BOILING POINT ORGANIC SOLVENT
DIPPING AND WASHING THE RESULTANT FIBROUS BASE IN WATER
DRYING THE RESULTANT COATED BASE
RESULTANT PRODUCT

A natural leather-like product having a high moisture permeability and moisture release, an elastic plasticity, and a peculiar hand is prepared by applying or impregnating a porous coated fibrous material with a solution of blended composition of polyglutamate and polyurethane and treating it by the wet coagulation method.

3,676,207
PERMANENT SIZING OF YARNS AND FIBERS WITH DURABLE POLYMERS AND COPOLYMERS FOR THE PRODUCTION OF FABRICS WITH IMPROVED PROPERTIES FOR PARTICULAR END USES

John T. Lofton and Robert J. Harper, Jr., Metairie, and Eugene J. Blanchard, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Continuation-in-part of application Ser. No. 756,323, Aug. 29, 1968. This application July 15, 1970, Ser. No. 55,259
Int. Cl. D06m *1/00*
U.S. Cl. 117—143 A **15 Claims**

This invention relates to a process for sizing cotton yarns and fibers. More particularly, this invention relates

to a method of sizing cotton fibers prior to weaving by coating or impregnating the fibers with polymers and copolymers which adhere well with the fiber. In this method, cotton fibers are sized with permanent polymer additives prior to weaving. The polymer additive employed is one which improves the wrinkle recovery or abrasion resistance when applied to woven fabric. By application of the polymer additive to the yarn, prior to weaving, the polymer additive serves the dual purpose of acting as a weaving size and improving the wrinkle recovery of the finished fabric.

3,676,208

ANTI-SLIP SURFACED ARTICLE

Ivan E. Griffin, Paramount, Calif., assignor to Raymond R. Griffin, Sandy, Utah

Continuation-in-part of abandoned application Ser. No. 415,360, Dec. 2, 1964. This application Feb. 14, 1969, Ser. No. 799,483

Int. Cl. C09k *3/14*; B32b *27/38*
U.S. Cl. 117—161 ZB **3 Claims**

An article having an anti-slip surface in the form of a hardened film having individual anti-skid islands raised above the superficial surface of the film. The islands are formed of one or more smooth-surfaced, solid spheres, such as glass beads, of diameter greater than the thickness of the film, the spheres being bottomed on the article and firmly anchored, but not covered by the surrounding portions of the film.

3,676,209

ANTISTATIC FILM PROPERTIES USING METHYL VINYL ETHER/MALEIC ACID INTERPOLYMER

E. Scudder Mackey, Binghamton, and Vincent J. Miceli, Conklin, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 728,346, May 10, 1968. This application June 12, 1970, Ser. No. 45,941

Int. Cl. G03c *11/00*; C09h *3/16*
U.S. Cl. 117—161 UC **4 Claims**

Photographic film resistant to the accumulation of static electrical charges thereon is obtained by adding to the outermost layer on at least on side of the film a neutralized interpolymer of methyl vinyl ether and maleic acid, typically in amounts from one to ten percent by weight based on the solids content of the outermost layer.

3,676,210

PROCESS FOR MAKING ELECTROPHOTOGRAPHIC PLATES

Meredith David Shattuck, San Jose, and William J. Weiche, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,149

Int. Cl. B44d *1/08*
U.S. Cl. 117—201 **7 Claims**

A conductive substrate is simultaneously sprayed with a resin binder suspended in a carrier liquid and with the precursors of a photoconductive compound.

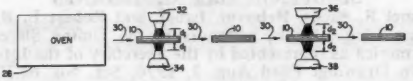
3,676,211

CONTACT SYSTEM FOR ELECTRICALLY CONDUCTIVE CERAMIC-LIKE MATERIAL

John G. Kourtesis, East Providence, R.I., and Leo Marcoux, Rehoboth, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1970, Ser. No. 340

Int. Cl. H01l *1/14*
U.S. Cl. 117—212 **13 Claims**



An improved contact system is provided for ceramic or ceramic-like material. Pills of electrically conductive or semiconductive ceramic material such as a barium titanate doped with a rare earth are placed in a holder so that the outer periphery of the pill is masked and flame sprayed with a metal which gives a good physical bond and an ohmic contact having low electrical resistance. Although several metals can be employed for this coating, aluminum is preferred. The pill is preheated to mitigate thermal shock problems. When aluminum is employed, preheating of the pill is also found to significantly enhance the bond strength between the ceramic and the aluminum. The end use of the pill affects the choice of the metallic layer applied to the ceramic. For certain applications, for instance, one layer may suffice, such as when pressure leads are employed. For such applications an ohmic contact having a good physical bond is all that is required; however, in many other applications, it is desired to solder leads to the contact layer. In such cases, the ceramic pill must have a first coating of aluminum to provide the necessary physical bond; however, since aluminum cannot be soldered, another layer of material is required. This second layer of solderable material, such as copper, is applied, preferably by flame spraying onto the unmasked surface of the pills. The pills are removed and the periphery is abrasively cleaned to ensure removal of any conductive material which may have gotten beyond the mask. The pills are then placed between the ends of a generally U-shaped springy lead so that the ends are biased into engagement with the opposite faces of the pill. The pills are passed through a foam flux, then into a solder bath. For many applications, when electrical insulation is not required, the pills are then ready for use upon cutting off of the bight portion of the U-shaped lead. Where electrical insulation is required, the pills are coated with a conventional encapsulating material. In either case, the leads may be deformed to provide stops useful to limit insertion of the switch into its mount and finally, if the bight portion of the lead is still attached, it is cut off.

3,676,212

PRODUCTION OF RESISTIVE COATINGS

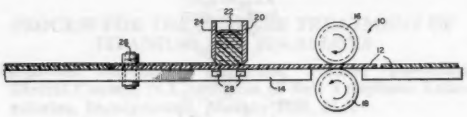
Ralph Ephraim Mishler, Menomonee Falls, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Mar. 10, 1970, Ser. No. 18,243

Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **19 Claims**

A method for producing a plurality of side-by-side micro-thin resistive plastic coatings on a dielectric substrate which comprises continuously advancing a dielectric substrate, e.g., a phenolic strip, at a substantially uniform rate along a prescribed path, supporting a plurality of flowable masses of conductive plastic material onto

confined portions of the advancing substrate and doctoring each mass to form a micro-thin stripe coating of each material on the substrate as it advances away from each mass; the location of each of the plastic masses supported on the confined portions of the substrate being selected so



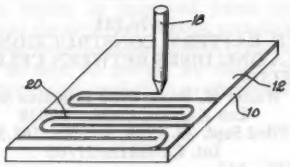
that the plastic materials doctored onto said substrate form an edge-like continuous uniform electrical junction between each coating, and the viscosity of said plastic materials being sufficient to form continuous substantially uniform edges along each of said coatings.

3,676,213

PROCESS FOR THE SELECTIVE FORMATION OF COATINGS BY ELECTROLESS DEPOSITION

John P. Marton, London, Ontario, Canada, assignor to Welwyn Canada Limited, London, Ontario, Canada

Filed Mar. 23, 1970, Ser. No. 21,661
Int. Cl. C23c *3/02*
U.S. Cl. 117—212 **3 Claims**



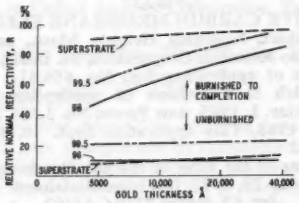
A process for forming metal and alloy coatings on a dielectric substrate or support by electroless deposition wherein a portion of the substrate surface is activated so that metal will deposit on the surface when the substrate is exposed to an electroless solution containing the metal. The activated portions of the surface define a pattern corresponding to the pattern desired for the metal and alloy coating to be provided on the substrate. Areas of the surface which are adjacent to the activated portion and which are unactivated are unreceptive to the deposit of metal.

3,676,214

TECHNIQUE FOR ENHANCING THE STABILITY OF TRANSITION METAL-GOLD THIN FILM COMPOSITES

Alan Taylour English, Summit, and Paul Anthony Turner, Murray Hill, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 6, 1970, Ser. No. 25,923
Int. Cl. B44d *1/14*
U.S. Cl. 117—217 **4 Claims**



A technique is described for obviating thermal degradation of adhesion of transition metal-gold thin film composites by effecting occlusion of pin holes in the gold film. This end is attained by mechanical procedures which take advantage of the malleable nature of the gold.

3,676,215

IMAGING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed Apr. 26, 1968, Ser. No. 724,596
Int. Cl. G03g *13/06, 13/10*
U.S. Cl. 117—230 **16 Claims**

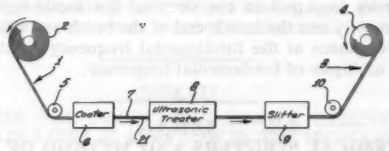
A simple electrostatographic imaging system including an electrostatographic imaging surface, a donor member having a liquifiable polar developer layer on a surface thereof and developer repellent spacer particles sandwiched between the electrostatographic imaging surface and the liquifiable polar developer layer. Imaging is accomplished in this system by forming an electrostatic latent image on the surface of the electrostatographic imaging surface, liquifying the liquifiable polar developer on the surface of the donor member and allowing the resulting liquified polar developer to migrate to the surface of the electrostatographic imaging surface in image configuration.

3,676,216

VIBRATION PROCESSING OF MAGNETIC TAPE

Georges D. Abitboul, Los Angeles, Calif., assignor to Audio Magnetics Corporation, Gardena, Calif.

Filed Jan. 21, 1969, Ser. No. 792,464
Int. Cl. H01f *10/00*
U.S. Cl. 117—237 **6 Claims**



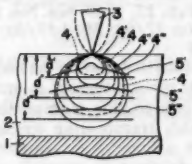
Ultrasonic processing of the magnetizable material coating on magnetic tape means renders the coating thickness more nearly uniform and thus improves tape quality and fidelity of reproduction. Improved tape handling techniques for such processing are provided including gas bearing biasing of the tape toward the processing head.

3,676,217

MAGNETIC RECORDING MEDIUM

Goro Akashi, Osamu Suzuki, and Matsuaki Nakamura, Odawara-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 4, 1969, Ser. No. 847,337
Int. Cl. H01f *10/06*
U.S. Cl. 117—239 **8 Claims**



Magnetic recording medium, resistant to the high-frequency damping effect of pressure, comprising a ferromagnetic recording layer and a powdery CrO_2-based surface layer.

3,676,218

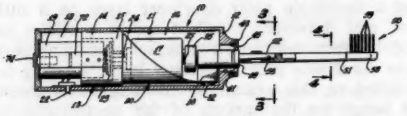
SONIC ENERGY CLEANING METHOD

Harold T. Sawyer, Pacific Palisades, Calif., assignor of a fractional part interest to Vernon D. Beehler, Los Angeles, Calif.

Continuation-in-part of applications Ser. No. 631,736, Apr. 18, 1967, now Patent No. 3,507,695, Ser. No. 658,673, Aug. 7, 1967, now Patent No. 3,535,726, and Ser. No. 832,156 and Ser. No. 832,180, both June 11, 1969. This application Sept. 2, 1969, Ser. No. 854,363

Int. Cl. A61c *17/00*

U.S. Cl. 134—1 3 Claims



A resonating toothbrush for cleaning teeth which is electrically operated. A housing is provided which serves as a handle and as a container for a rechargeable electric battery and, in the preferred embodiment, an electric motor. Extending parallel to the motor is an arm anchored to the housing on a partition which separates the battery from the motor and having a free end near the base of the toothbrush shaft. There is an eccentric connection between the motor shaft and the free end of the arm which when actuated, resonates the free end of the arm much the same as the action of free resonant motion of the arms of a tuning fork. A corresponding motion is thereby imparted to the shaft of the toothbrush which ultimately sets the bristle end of the brush and the bristles in resonance at the fundamental frequency or at any of the multiples of fundamental frequency.

3,676,219

CHEMICAL STRIPPERS AND METHOD OF USING

Kenneth H. Schroeder, Wilmington, Del., and George J. Kelly, Jr., Port Murray, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 866,036, Oct. 13, 1969. This application Sept. 25, 1970, Ser. No. 75,660

Int. Cl. C23g *1/02*

U.S. Cl. 134—3 3 Claims

Strippers for removal of organic films and deposits, such as the polymeric etch resists employed in the manufacture of semiconductors from silicon bodies or silicon dioxide coated silicon bodies, are composed of solutions of chromium trioxide in mixtures of strong nitric and sulfuric acids containing about 2% to about 20% water.

3,676,220

FACILITATED TRANSPORT LIQUID MEMBRANE

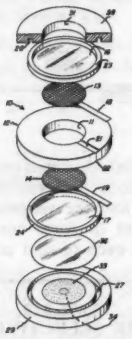
William J. Ward III, Schenectady, N.Y., assignor to General Electric Company

Filed Feb. 27, 1969, Ser. No. 803,019

Int. Cl. H01m *27/02*; B01d *57/00*; C01b *21/36*

U.S. Cl. 136—86 9 Claims

A confined liquid membrane having an electrode in contact with each surface thereof is provided with a concentration of a non-volatile transporting specie in solution therein, which transporting specie can be oxidized or reduced from a first to a second valence state. The transporting specie must be reactive with a specific gas in at least one of the multiple valence states. If the transporting specie is reactive with the gas in both valence states, such reactions must have different equilibrium constants. By bringing the specific gas into contact with one surface of such a liquid membrane and applying an electrical potential across the electrodes on each side thereof, the specific gas may be pumped through the membrane against a concentration gradient. Similarly,



while a concentration gradient in the specific gas exists across the structure described, an electrical potential difference develops across the film and the electrodes.

3,676,221

STACKED BATTERY CONSTRUCTION HAVING INSULATING DISKS BETWEEN CELLS JOINED BY WELDS

Walter H. Bach, 6950 Romaine St., Los Angeles, Calif. 90038

Filed Sept. 23, 1968, Ser. No. 761,532

Int. Cl. H01m *21/00*

U.S. Cl. 136—111 10 Claims

A battery comprising a plurality of stacked, disk-like sealed cells secured together by cups fitted over one cell of each pair and having bottoms spot-welded to the next cell and sidewalls spot-welded to the interfitting cell. A heat-shrunk sheath encloses the battery and has caps forming the poles. Between each pair of cells is a circular disk of insulating material against which the cup bottoms bulge upon expansion of the contents of the cells, thereby breaking the welds and electrically disconnecting the cells.

3,676,222

CONDUCTIVE CARBON MEMBRANE ELECTRODE

Max C. Deibert, Needham Heights, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

Continuation of application Ser. No. 656,611, May 24, 1967, which is a division of application Ser. No. 435,821, Mar. 1, 1965, now Patent No. 3,385,736, dated May 28, 1968. This application Sept. 10, 1970, Ser. No. 70,982

The portion of the term of the patent subsequent to May 28, 1985, has been disclaimed

Int. Cl. H01m *27/04*, *13/02*

U.S. Cl. 136—121 1 Claim

Novel membrane electrodes of particulate electrode material comprising conductive hydrophobic carbon and

polytetrafluoroethylene with the electrode material particles coating the polytetrafluoroethylene particles, and substantially all of the surface of the electrode material being exposed.

3,676,223

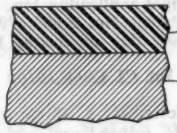
PROCESS FOR THE SURFACE TREATMENT OF TITANIUM AND ITS ALLOYS

Hargovind Nihchaldas Vazirani, Passaic Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 17, 1970, Ser. No. 29,511

Int. Cl. C23f 7/14

U.S. Cl. 148—6.15 R 5 Claims



Method for the surface treatment of titanium and its alloys which results in improved joints subsequently formed between the metal and organic materials and comprises treatment in an aqueous solution containing hydrofluoric acid, at least 60 percent by volume of concentrated phosphoric acid, and nitric or chromic acid.

3,676,224

PHOSPHATING SOLUTION WITH SCALE SUPPRESSING CHARACTERISTICS

Charles Thomas Snee, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,518

Int. Cl. C23f 7/08

U.S. Cl. 148—6.15 Z 14 Claims

Modified zinc phosphate solutions for the treatment of metal surfaces, wherein the modifying metal is calcium, magnesium, lithium, beryllium, strontium, cadmium or barium (preferably calcium and/or magnesium), tend to form scale on the surfaces of phosphating apparatus. This scale formation is suppressed by the addition to the phosphating solution of a fluorine-containing complex ion such as fluosilicate or fluoborate.

3,676,225

THERMOMECHANICAL PROCESSING OF INTERMEDIATE SERVICE TEMPERATURE NICKEL-BASE SUPERALLOYS

William A. Owczarski, Cheshire, John M. Oblak, Rocky Hill, and Daniel F. Paulonis, Middletown, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed June 25, 1970, Ser. No. 49,957

Int. Cl. C22f 1/10

U.S. Cl. 148—12.7 8 Claims

The nickel-base superalloys, such as Inconel 718 and Incoloy 901, are strengthened by thermomechanical processing, usually including solutioning, cold work, precipitation aging and warm working. The processing results in a fine-grained microstructure containing dispersed intermetallic particles and a dense dislocation substructure which may be stabilized by post-deformation precipitation aging.

3,676,226

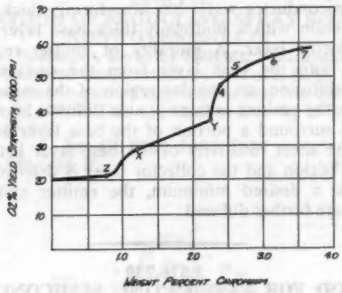
HIGH STRENGTH COPPER-NICKEL ALLOY

Frank Arthur Badia, Ringwood, N.J., and Gary Neil Kirby, Ann Arbor, Mich., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 708,973, Feb. 28, 1968, which is a continuation-in-part of application Ser. No. 581,066, Sept. 21, 1966. This application June 13, 1969, Ser. No. 840,106

Int. Cl. C22c 9/06

U.S. Cl. 148—32 12 Claims



Corrosion resistant copper-base alloy containing nickel and chromium has special hardening characteristics which afford high strength properties upon cooling from elevated temperatures over a wide range of cooling rates.

3,676,227

PROCESS FOR PRODUCING SINGLE ORIENTED SILICON STEEL PLATES LOW IN THE IRON LOSS

Fumio Matsumoto, Toshiya Wada, Takaaki Yamamoto, Osamu Tanaka, Kunihide Takashima, and Toshihiko Takata, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

No Drawing. Filed Oct. 31, 1969, Ser. No. 873,070

Claims priority, application Japan, Nov. 1, 1968, 43/79,484

Int. Cl. H01f 1/18

U.S. Cl. 148—111 1 Claim

A process for producing a single oriented silicon steel plate or particularly a single oriented silicon steel plate having a high magnetic induction produced by adding a small amount of Al in the molten steel characterized by that in heating steel plate it is painted with an annealing separating agent, to which boron or boron compound is added in a prescribed amount, and then finally annealed, whereby the iron loss can be remarkably reduced.

3,676,228

METHOD OF MAKING A P-N JUNCTION DEVICE

Takeshi Sakurai, Hyogo-ken, and Zenpei Tani, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed June 17, 1970, Ser. No. 47,031

Claims priority, application Japan, June 20, 1969, 44/49,181, 44/49,185

Int. Cl. H01l 7/38

U.S. Cl. 148—171 9 Claims

Method of making P-N junction device which uses the liquid phase epitaxial growth technique in which

elements of Group IV are employed as amphoteric impurities for semiconductors of compounds of Groups III–V. The growth cooling rate is changed to grow N-type and P-type layers successively on the substrate.

3,676,229

METHOD FOR MAKING TRANSISTORS INCLUDING BASE SHEET RESISTIVITY DETERMINING STEP

Willem Gerard Einthoven, Belle Mead, Evelyn Speter Jetter, East Brunswick, and Carl Franklin Wheatley, Jr., Somerset, N.J., assignors to RCA Corporation

Filed Jan. 26, 1971, Ser. No. 109,783
Int. Cl. H01l 7/44
U.S. Cl. 148—186 7 Claims

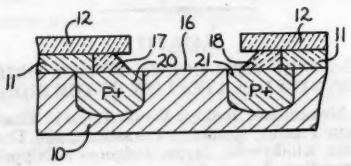
A semiconductor wafer has a uniformly thick collector layer therein with a uniformly thick base layer adjacent the collector layer. A plurality of emitter regions are diffused into the base layer from the surface. During emitter diffusion, an annular region of the same conductivity as the emitter regions is also diffused into the base layer to surround a portion of the base layer at the surface. The sheet resistivity of the base layer between the annular region and the collector layer is determined, and if below a desired minimum, the emitter and annular regions are further diffused.

3,676,230

METHOD FOR FABRICATING SEMICONDUCTOR JUNCTIONS

Edward J. Rice, Los Angeles, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Feb. 16, 1971, Ser. No. 115,411
Int. Cl. H01l 7/44
U.S. Cl. 148—187 29 Claims



A method for forming semiconductor junctions. A semiconductor material of a given conductivity is provided, two sequential passivating layers being disposed on the surface thereof, the passivating layers being adapted to be etched by mutually exclusive etching compounds. A portion of the semiconductor surface is exposed, the passivating layer adjacent the surface of the semiconductor material being undercut relative to the upper passivating layer. A doped oxide is disposed upon the semiconductor surface including that portion adjacent the undercut passivating layer. The doped oxide is etched in a manner leaving portions of the doped oxide in intimate contact with the surface of the semiconductor material substantially adjacent the undercut passivating layer. The dopant is then diffused into the semiconductor surface forming appropriate semiconductor junctions therein.

3,676,231

METHOD FOR PRODUCING HIGH PERFORMANCE SEMICONDUCTOR DEVICE

Bartholomew P. Medvecky, Poughkeepsie, Avtar S. Oberai, Wappingers Falls, and Alan Platt, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 20, 1970, Ser. No. 12,977
Int. Cl. H01l 7/44
U.S. Cl. 148—188 6 Claims

A method for producing a diffused boron region in a silicon semiconductor having an impurity profile characterized as a step function and having a surface impurity concentration less than the solid solubility of boron in silicon wherein the body is exposed to a gaseous mixture of O_2, and BBr_3, and an inert carrier gas at an elevated temperature which forms a glassy boron rich layer, and subsequently heating the resultant body in an oxidizing environment, or a combination oxidizing and non-oxidizing environments, to increase the depth of the diffused region and simultaneously reduce the surface concentration producing a profile having a step function configuration.

3,676,232

PREPARATION OF UNIFORM AND STORABLE FUEL MIXTURES

James M. Lucas, El Dorado Hills, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Original application Jan. 12, 1968, Ser. No. 698,660, now Patent No. 3,607,470, dated Sept. 21, 1971. Divided and this application Feb. 7, 1969, Ser. No. 810,446
Int. Cl. C06b 19/02
U.S. Cl. 149—6 1 Claim

This patent describes a thixotropic, storage and mechanically stable, gelled liquid rocket fuel comprising hydrazine fuel containing therein a suspension of a polysemicarbazide coated aluminum hydride, and the method for the preparation of the same.

3,676,233

CASELESS PROPELLANT CHARGE CONTAINING NITROCELLULOSE IN A SYNTHETIC RESIN

Theodor Netzer, Pocking, and Hans-Jurgen Block, Altmuhldorf, Germany, assignors to Nitrochemie G.m.b.H., Aschau, Germany

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,307
Claims priority, application Germany, Nov. 30, 1968, P 18 11 924.9
Int. Cl. C06b 5/00, 5/04
U.S. Cl. 149—19 4 Claims

A compact propellant charge of any configuration made from propellant powders without a casing or shell.

3,676,234

EXPLOSIVE SLURRY HAVING CONSTANT DETONATION VELOCITY OVER A WIDE TEMPERATURE RANGE

William L. Schwoyer, Yardley, Pa., assignor to Commercial Solvents Corporation, New York, N.Y.

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,632
Int. Cl. C06b 15/00
U.S. Cl. 149—38 19 Claims

An aqueous explosive slurry is provided having a constant detonation velocity over a wide temperature range, and sensitive enough to be detonated in a film or layer from ¼ to ½ inch thick, based on a primary high explosive such as pentolite, nitrostarch or pentaerythritol tetranitrate, an inorganic nitrate oxidizer, an amide forming a eutectic mixture with inorganic nitrates, and a water-soluble thickening agent, if desired, to adjust the viscosity of the slurry.

3,676,235

EXPLOSIVE COMPOSITION CONTAINING AMMONIUM NITRATE AND AN ORGANIC SENSITIZER DISSOLVED IN DIMETHYLFORMAMIDE

Edwin H. Nuscher and Jack D. Slater, Savannah, Ga., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed Oct. 23, 1968, Ser. No. 770,093
Int. Cl. C06b 9/00
U.S. Cl. 149—39 8 Claims

Ammonium nitrate explosives are conveniently prepared by dissolving a sensitizing compound such as TNT

in dimethyl formamide and then mixing it at ambient temperatures with ammonium nitrate and additional fuel components. The resultant mixture is uniform in performance over extended periods of time.

3,676,236
METHOD OF FORMING IN PLACE A GELLED SUSPENSION EXPLOSIVE

Frank J. Klima, Virginia, and James D. Duncan, Chisholm, Minn., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

No Drawing. Filed Mar. 23, 1970, Ser. No. 22,059
Int. Cl. C06b *15/00*
U.S. Cl. 149—41 **3 Claims**

The method of forming in place a stable, gelled suspension explosive composition as disclosed in U.S. Pat. 3,409,486 is improved by regulating the pH of the composition to a value between 4 and 6 and injecting into the exit stream from the pump an aqueous solution of zirconium sulfate, aluminum sulfate and chromic acid to yield a tougher, more water resistant gel.

3,676,237
METHOD OF MAKING NYLON MONOFILAMENT SINKING FISHING LEADER

Virgil N. Peters, R.F.D. 1, Box 4, Stevens Point, Wis. 54423

Filed Nov. 17, 1970, Ser. No. 90,327
Int. Cl. B29c *23/00*; A01k *91/00*
U.S. Cl. 156—2 **5 Claims**

A sinking fishing leader of uniform density and the method of making same from level or tapered extruded nylon monofilament by chemical treatment to produce a sinking leader used for dry fly and wet fly fishing. The leaders are made in various lengths and with various butt and tip diameters and are dyed in various colors.

3,676,238
MANUFACTURE OF FLUID LOGIC COMPONENTS FOR FLUIDIC CIRCUITS

Owen Desmond Arthur Charles Furlong, East Coker, and Neil L. Bottrell, Yeovil, England, assignors to Westland Aircraft Limited, Yeovil, Somerset, England

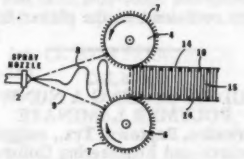
Filed Dec. 29, 1969, Ser. No. 888,352
Int. Cl. B32b *31/14*
U.S. Cl. 156—3 **15 Claims**

Fluid logic components for fluidic circuits are produced by first producing a master design or templet, casting a mold to provide a pattern of the master design or templet, and casting from the mold a unit having cavities or ducts corresponding to the duct system required in the logic element. The cavities and/or ducts are positively sealed and enclosed by sealing or fusing a cover over the duct system. The unit having the cavities and ducts preferably is formed of an epoxy resin, and the cover can be a preformed cover which is bonded to the base unit using an epoxy resin as a sealing material, or the cover can be formed by casting an epoxy resin and catalyst mixture over the base part, after first filling the cavities and ducts with a paraffin wax. The paraffin wax is thereafter removed by heating and flushing with an organic solvent. The sealing of the cavities and ducts can also be accomplished by applying thereover a thin cover plate of reinforced plastic, bonded thereto with a thin adhesive coat of epoxy resin, after which a final bottom plate is bonded to the casting.

3,676,239
METHOD OF PRODUCING SPRAY SPUN NONWOVEN SHEETS

John W. Soehngen, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 580,994, Sept. 21, 1966. This application Dec. 8, 1970, Ser. No. 96,041
Int. Cl. B32b *3/00, 5/14*
U.S. Cl. 156—16 F **9 Claims**



A three-dimensional nonwoven fibrous assembly having an upper and lower surface indented to give a puckered effect and a method of producing this assembly by spray spinning directly into a zone at least partially occupied by convergent portions of a pair of moving collection surfaces, having a series of spaced projections on their respective surfaces which constitute the primary collection loci.

3,676,240
METHOD OF ETCHING MATERIALS CAPABLE OF BEING ETCHED WITH HYDROFLUORIC ACID

Theodore Frank Retajczyk, Jr., North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,505
Int. Cl. H01l *7/50*
U.S. Cl. 156—17 **13 Claims**

A method for etching the oxides of silicon and other materials capable of being etched with aqueous hydrofluoric acid is described. The material to be etched is treated with an etching solution comprising (a) an etchant having the general formula $R_4NH_{x+1}F_{y+2}$, wherein x and y may be 0 or 1, and x and y are equal, and wherein R may be a hydrogen radical or an organic radical represented as C_nH_{2n+1} wherein n is an integer from 1 to 10, and (b) a suitable solvent for the etchant.

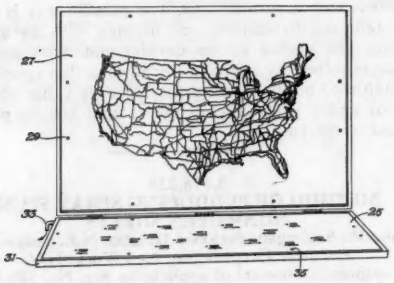
3,676,241
METHOD OF MANUFACTURING A LAMINATED PLANAR STRUCTURE

George W. Plumly, 3900 Tamworth Road, Fort Worth, Tex. 76116

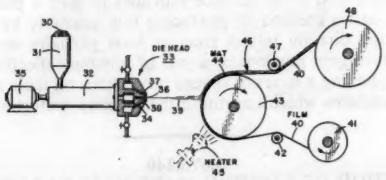
Filed Dec. 17, 1969, Ser. No. 885,755
Int. Cl. B29j *1/00*
U.S. Cl. 156—62 **16 Claims**

A method of making an integral laminated planar structure such as a map having a total information content

composed of general information and specialized information, characterized by preparing a planar first layer containing the general information; preparing a photographic reproduction overlay containing the specialized information; and accurately aligning and bonding the photographic reproduction overlay and the planar first layer. The photographic reproduction overlay is transparent except for the specialized information it contains so as to expose the general information contained on the planar first layer.



3,676,242
METHOD OF MAKING A NONWOVEN POLYMER LAMINATE
James S. Prentice, Baytown, Tex., assignor to Esso Research and Engineering Company
Filed Aug. 13, 1969, Ser. No. 861,536
Int. Cl. B29j *5/08*
U.S. Cl. 156—62.4 11 Claims

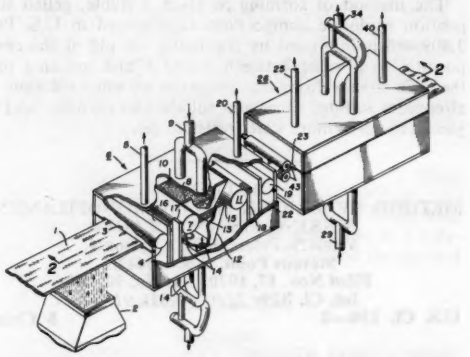


A laminar structure is produced by thermally bonding a nonwoven mat of melt-blown polyolefin fibers to a polyolefin film. The nonwoven mat may be thermally bonded to the film either as the film or the nonwoven mat is produced or by pressing a preformed nonwoven mat of polyolefin fibers onto a hot polyolefin film.

3,676,243
PROCESS FOR THE PRODUCTION OF FLEECES
Franz Sasshofer, Vocklabruck, and Johannes Krässig, Gmunden, Austria, assignors to Chemiefaser Lenzing Aktiengesellschaft, Lenzing, Austria
Filed Nov. 18, 1970, Ser. No. 90,678
Claims priority, application Austria, Nov. 21, 1969, A 10,875
Int. Cl. D04h *3/16*
U.S. Cl. 156—167 5 Claims

The invention relates to a process for the production of fleeces, in which threads are deposited on a perforated, moving support which is subjected to suction, and the fleece so produced is compacted mechanically, thermally or by glueing. The improvement resides in that the threads are guided to the support as a series of threads arranged in one plane and parallel to each other, said series being obtained by cutting a polymer foil and simultaneously stretching the threads while they are being made. Thus each individual thread may form a loop so that a highly dense, uniformly tangled arrangement is obtained.

3,676,244
PROCESS FOR FORMING HIGH STRENGTH SPUNBONDED FABRIC BY AUTOGENOUS BONDING OF FILAMENTS
Dong W. Kim, Chester, Va., assignor to Monsanto Company, St. Louis, Mo.
Filed June 29, 1970, Ser. No. 50,497
Int. Cl. D04h *3/10*; C09j *5/02*
U.S. Cl. 156—181 6 Claims



A nonwoven web comprised of polyamide filaments which are bonded together at a substantial number of filament cross-over points by the absorption and subsequent desorption of a hydrogen halide gas is provided with increased web tenacity by elevating the moisture content of the filaments prior to bonding to at least 3% based on the filament weight.

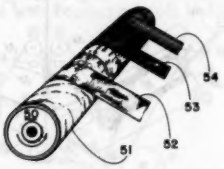
3,676,245
PROCESS FOR THE PRODUCTION OF NONWOVEN WEBS OF CONTINUOUS FILAMENTS
Werner Helmut and Dieter Frank, Elsenfeld, and Werner Drachenberg, Streit, Germany, assignors to Akzona Incorporated, Asheville, N.C.
Filed Dec. 1, 1969, Ser. No. 881,168
Claims priority, application Germany, Dec. 4, 1968, P 18 12 516.1
Int. Cl. D04h *1/72*
U.S. Cl. 156—181 14 Claims

A process for producing a nonwoven web or fabric of substantially continuous synthetic polymer filaments in which the initially formed web of randomly deposited filaments carried on an endless band or screen is sprayed with very small droplets of water in limited amounts sufficient to enhance the coherent strength of the web, after which the web is removed from the band or screen and only then treated with a binder to provide an adhesive bonding of the filaments.

3,676,246
METHOD FOR LONGITUDINAL REINFORCING PLASTIC PIPES
James L. Grosh, Los Altos, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Original application May 29, 1967, Ser. No. 641,963. Divided and this application Mar. 9, 1970, Ser. No. 22,729
Int. Cl. B31c *13/00*; B32b *31/12*
U.S. Cl. 156—188 6 Claims

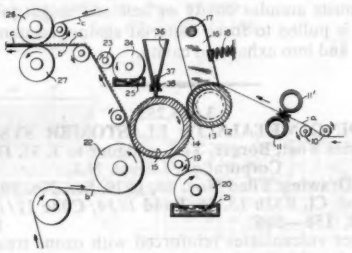
A longitudinally extending nonwoven tape comprising longitudinally extending tacking strands supporting a

multiplicity of transverse filament bundles. The tape is manufactured by continuously depositing adhesive coated tacking strands onto both sides of continuous moving double band and continuously winding filament bundles over said strands and around said band. The band is passed between rollers and heated to bond the filament to



the tacking strand. The band is then passed against a cutter which severs the wound filaments between the bands and permits the longitudinally extending tape to be removed from the band. The tape is used to provide longitudinal reinforcement of reinforced plastic pipe by winding the tape around the mandrel in the pipe fabrication process.

3,676,247
CORRUGATING PAPERBOARD
Andrew W. Morris, North Balwyn, Victoria, and Reginald J. Norman, Kew, Victoria, Australia, assignors to Australian Paper Manufacturers Limited, Melbourne, Victoria, Australia
Filed Jan. 19, 1970, Ser. No. 4,059
Claims priority, application Australia, Feb. 3, 1969, 49,922/69
Int. Cl. B31f *1/22*
U.S. Cl. 156—205 **12 Claims**



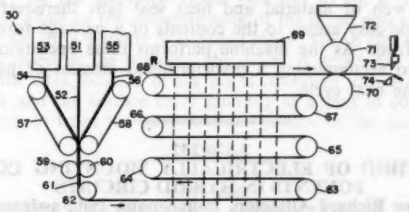
A method of corrugating paperboard at cold (ambient) or intermediate temperatures up to 320° F. but at conventional speeds or higher by treating both sides of the medium prior to corrugation with a lubricant such as a mixture of stearates and paraffin wax so that the coefficient of kinetic friction between the medium and corrugator is less than would be obtained by conventional heat and steam pretreatment.

3,676,248
METHOD FOR APPLYING LETTERS TO PLAQUES AND THE LIKE
William M. Swartz, 1430 W. Wrightwood Ave., Highland Park, Ill. 60614
Filed Sept. 11, 1969, Ser. No. 857,063
Int. Cl. C09j *5/04*; B29c *27/10*
U.S. Cl. 156—235 **5 Claims**

Method for applying indicia to a plaque or other surface comprises applying a transfer sheet containing a pressure-sensitive adhesive to the indicia. While the indicia is on the sheet, the back of the indicia is coated with adhesive, and then the transfer sheet is applied over the plaque in predetermined registration therewith to position the indicia properly onto the plaque. After the adhesive on

the indicia has dried, the sheet is stripped from the indicia, leaving the same bonded to the plaque.

3,676,249
IRRADIATION METHOD FOR PRODUCTION OF FIBER-REINFORCED POLYMERIC COMPOSITES
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of application Ser. No. 269,832, Mar. 22, 1963, which is a continuation-in-part of application Ser. No. 651,749, Apr. 9, 1957. This application is also a continuation-in-part of application Ser. No. 501,174, Oct. 22, 1965, which is a continuation-in-part of application Ser. No. 393,292, Aug. 31, 1964, now Patent No. 3,594,254. This application Dec. 18, 1967, Ser. No. 696,966
Int. Cl. B32b *31/30, 31/28*
U.S. Cl. 156—244 **12 Claims**



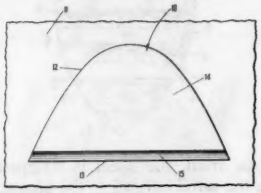
A method is provided for irradiating material on a continuous basis to improve or predeterminately change its physical and chemical characteristics. In one form, polymeric material is continuously formed by extrusion and is continuously combined with or sealed to a second material to form an integral unitary structure therewith after which said unitary structure is driven and guided in a predetermined path through a field of intense radiation which is operative to change the physical characteristics of one or more of the components of the composite material such as by effecting the cross linking of the polymer.

In another form, a material such as a polymer is continuously fed or formed into a sheet or other suitable shape and a plurality of reinforcing elements such as glass filaments are encapsulated within the polymer or otherwise secured thereto on a continuous basis. The resulting composite filament-reinforced member is thereafter treated to effect the cross linking of the polymer to improve its physical characteristics and to improve the bond between the polymer and the reinforcing filaments.

3,676,250
SHOE STIFFENER MEANS AND METHOD
William E. Palm, Jr., Beverly, Mass., assignor to Compo Industries, Inc., Waltham, Mass.
Filed Oct. 17, 1969, Ser. No. 867,334
Int. Cl. B32b *31/06*
U.S. Cl. 156—249 **1 Claim**

An integral, unsupported, preformed thermoplastic film stiffener for a shoe upper is formed by molding a thermoplastic shoe stiffener blank on a release surface with said stiffener blank defining a skived edge and removing the

thermoplastic shoe stiffener blank from the release surface. The shoe stiffener blank can then be positioned between a shoe upper material and a shoe inner layer whereupon the stiffener blank is adhered by heat and pressure to com-



bine the shoe upper material and the shoe inner layer in a sandwich which can be lasted as to form a box toe in a shoe upper. The novel stiffener blanks preferably have substantially uniform thickness at all but a marginal edge portion which is skived.

3,676,251

PUNCHING OPENINGS IN A WEB AND HEAT SEALING TABS THERETO

William A. Young, Jr., and Walter J. Quattlebaum, Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 7, 1971, Ser. No. 104,725

Int. Cl. B29c *17/08*

U.S. Cl. 156—252 **4 Claims**

A method and apparatus to accurately punch openings in a web of material and heat seal tabs thereover to provide easy access to the contents of a package formed therefrom. As the machine performs these operations it is also accumulating a predetermined amount of paper for the next cycle.

3,676,252

METHOD OF ELECTRICALLY MOUNTING COMPONENTS IN HYBRID CIRCUITS

Trevor Richard Allington, Indianapolis, Ind., assignor to RCA Corporation

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,108

Int. Cl. B32b *33/00*

U.S. Cl. 156—277 **2 Claims**

In mounting components such as ceramic chip capacitors on insulating substrates so as to make good electrical connection with a conducting area of the substrate, a solventless conducting composition is screen printed on the mounting surface and the chip is pressed into the composition. The composition comprises a low viscosity liquid epoxy resin, a hardener for the resin, and a relatively high proportion of silver powder.

3,676,253

PROCESS OF MAKING FLOCKED PLATE STRUCTURE FOR ELECTRIC BATTERIES

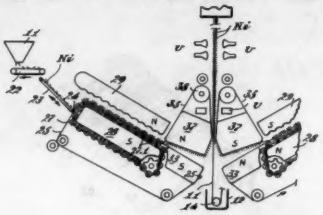
Irvin W. Cox, East Acton, Mass., assignor to Cambridge Thermionic Corporation, Cambridge, Mass.

Original application Nov. 20, 1969, Ser. No. 878,434, now Patent No. 3,563,801. Divided and this application Nov. 2, 1970, Ser. No. 86,231

Int. Cl. B44d *1/092*

U.S. Cl. 156—279 **1 Claim**

A conductive metal strip for alkaline batteries carries an effectively ordered array of extremely, thin, square nickel (or nickel plated iron) flakes stacked approximately normal to and transversely of the strip with their edges approximately parallel, and with one edge of each flake conductively joined to the strip by a sintered nickel fillet. The flakes are slightly separated by the mode of fabrication and by deviations from exactly normal and transverse position on the strip, and from exact flatness. These deviations are so small as compared to the generally normal and transverse positions and the flatness of the flakes, that they provide essentially regular interstices with optimal surface area of active material and accessibility thereof to electrolyte, and minimal volume and conductive length of supporting material.



A suitable technique of fabricating a flocked strip by way of magnetic stacking of flakes on belts and finally on the strip, traveling at different speeds, is described.

3,676,254

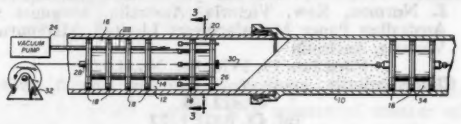
INTERNALLY SEALING PIPE JOINT

Hanford Z. Hight, Short Hills, and Stephen Lesky, Metuchen, N.J., assignors to Bonded Products, Inc., South Orange, N.J.

Filed Feb. 20, 1970, Ser. No. 13,116

Int. Cl. B29c *17/00*

U.S. Cl. 156—286 **8 Claims**



Epoxy resin sealing material is loaded onto a plunger in pipe behind a vacuum chamber therein, which chamber exhausts annular cavity of bell and spigot joint, and plunger is pulled to force material against vacuum chamber wall and into exhausted cavity.

3,676,255

BONDING METALS TO ELASTOMER SYSTEMS

Andries Voet, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,801

Int. Cl. B32b *15/06;* **B44d** *1/34;* **C08c** *11/18*

U.S. Cl. 156—306 **1 Claim**

Rubber vulcanizates reinforced with ozone treated furnace carbon blacks show improved adhesion to a surface of brass.

3,676,256

BONDING METALS TO ELASTOMER SYSTEMS

Peter Aboytes, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,810

Int. Cl. B32b *15/06;* **B44d** *1/34;* **C08c** *11/18*

U.S. Cl. 156—306 **1 Claim**

Rubber vulcanizates reinforced with air oxidized treated furnace carbon blacks show improved adhesion to a surface of brass.

3,676,257

METHOD OF AND APPARATUS FOR APPLYING LABELS TO ARTICLES OR PACKAGES

James E. Ingalls, 325 2nd Ave. S., St. Petersburg, Fla. 33060

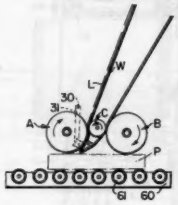
Filed July 3, 1969, Ser. No. 838,805

Int. Cl. B65h *25/04, 5/28*

U.S. Cl. 156—351 **5 Claims**

There is disclosed a method of applying labels to packages or articles to be labeled in which a silicone coated

paper carrier web having a succession of pressure-sensitive adhesive coated labels peelably adhered thereto is intermittently advanced past a label applying zone where the web undergoes an abrupt change of direction and a label is peeled off the web and applied to an article or package to be labeled with the carrier web being conjointly pushed and pulled through said abrupt change of direction while the web is advancing by a three roll means arrangement in which a middle web contacting roll is frictionally driven



by contact with the other two rolls. Additionally, there is disclosed apparatus for carrying out such method which includes means operable, responsive to an approaching article or package to cause the middle roll to make contact with the web and the other two rolls to cause advance of the web to effect a labelling operation and means operable, responsive to approaching movement of a next label to cause said middle roll to move out of contact with the other two rolls to effect stoppage of said carrier web.

3,676,258

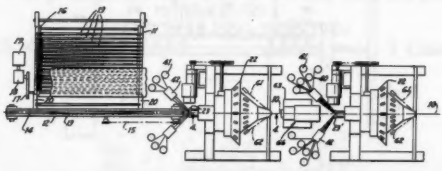
APPARATUS FOR PRODUCING FIBER GLASS ARTICLES

Carl Thomas Jackson, Fairview, Pa., assignor to True Temper Corporation, Cleveland, Ohio

Original application July 25, 1967, Ser. No. 655,919, now Patent No. 3,567,542. Divided and this application Feb. 20, 1970, Ser. No. 12,999

Int. Cl. B65h *81/08*

U.S. Cl. 156—392 **15 Claims**



There is disclosed herein a method and apparatus for continuously producing fiber glass reinforced articles by continuously pulling a plurality of fiber glass strands along a production line, some of said strands being provided with an uncured resin, arranging the strands into a tubular shape, successively inserting mandrels into the tube thus formed, curing the resin, cutting the mandrels apart, and removing the mandrels from the hollow articles formed thereon.

3,676,259

TIRE BUILDING APPARATUS HAVING A PLURALITY OF COMPONENT APPLYING STATIONS AND DRUMS

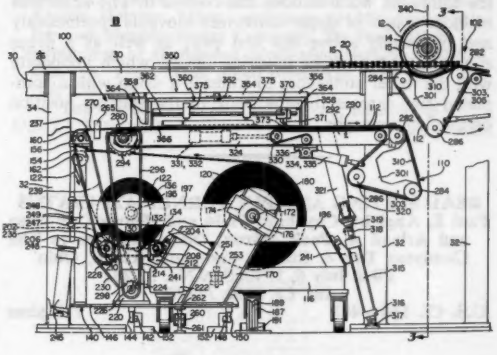
Paul E. Appleby, Cuyahoga Falls, Denver C. Folden, Akron, and Donald C. Kubinski, Seville, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 6, 1970, Ser. No. 52,228

Int. Cl. B29h *17/20*

U.S. Cl. 156—395 **15 Claims**

The tire building apparatus has a plurality of building drums movable by conveyors between stations in certain of which a ply or plies is or are wound on each of successive drums. A single belt trained about rolls carried in an articulated belt conveyor frame is movable to conform a portion of the belt about an arcuate portion of the drum in such station or away from it. A supply roll of ply stock on a wheeled truck is unwound by a surface drive arrangement having belts forming a cradle which rotates a core on which a cloth liner is wound off from the supply



roll to feed the ply material onto the single belt. A cut off device on the conveyor frame operates to cut a length of ply equal to the circumference of the drum plus an allowance for a suitably overlapped splice. The so cut length is wrapped by the belt onto the drum. A device for sensing the edge location of the ply is operative to move the truck and the surface drive laterally as a unit to correct deviations from the desired edge location of the moving ply.

3,676,260

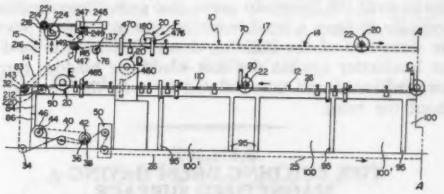
TIRE BUILDING APPARATUS

Paul E. Appleby, Cuyahoga Falls, Robert S. Riggs, Stow, and Edwin S. Woodhall, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 6, 1970, Ser. No. 52,214

Int. Cl. B29h *17/14*

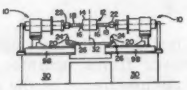
U.S. Cl. 156—396 **28 Claims**



Tire building apparatus disclosed features a spaced apart parallel pair of continuously moving conveyors of roller chain on which a plurality of collapsible tire building drums are carried. Each drum has an extended center shaft having a freely rotatable bearer at each end which rests on and is moved by engagement with seats afforded by the side link edge shapes of the roller chain. Mechanism for collapsing and expanding the drum includes a right and lefthand screw housed in the hollow center shaft. At successive work stations disposed along the conveyors each drum is stopped by swing arms movable to arrest the drum and is lifted and chucked on centers which coaxially engage the ends of the shaft. Each work

station accommodates apparatus which performs a single operation, e.g. applying a liner or a cord ply, setting tire beads, enfolding carcass ply or plies about the beads, applying tread or tread and sidewall stitching, and removal of a completed carcass from the drum. Each work station is operable at its own rate and in its own time interval, relatively independently of preceding and succeeding stations. Holding stations disposed between immediately adjacent work stations have swing arms which stop forward movement of a drum on the conveyor until the following work stations can receive it. The apparatus includes a pair of upper conveyors movable continuously and oppositely above the first pair, as well as a drum elevating and a drum lowering device which cooperate with the upper conveyors to transfer a drum with a completed tire carcass thereon back to the starting position on the first conveyor.

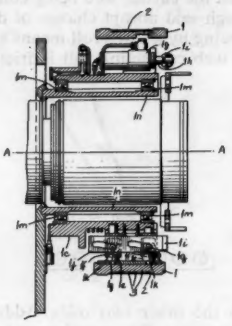
3,676,261
BEAD SETTING AND PLY TURNUP APPARATUS
Paul E. Appleby, Cuyahoga Falls, and Denver C. Folden and Arland A. Peck, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 6, 1970, Ser. No. 52,231
Int. Cl. B29h *17/22*
U.S. Cl. 156—401 **7 Claims**



The apparatus disclosed features mechanisms particularly useful in combination with a tire building machine having a plurality of stations, a conveyor, and a plurality of tire building drums movable by the conveyor between the stations wherein a component or components of a complete tire carcass are applied to each building drum. The disclosed mechanism includes a coaxially opposed pair of spindles which support a single tire building drum therebetween, a pair of carriages having bladder turnup assemblies fixed thereon surrounding the spindles for movement coaxially toward or away from the drum. A cylindrical sleeve integral with the carriage supports a sleeve carrying ply turndown fingers and a bead setter sleeve for placing a bead. Both the finger sleeve and the beadsetter sleeve are moved separately and relatively of the carriage and turnup assembly, the latter being movable axially over the fingers to move free ends thereof radially inwardly to form a bead receiving seat in a ply or plies at the shoulders of the building drum. The bead is held by the beadsetter against the seat while the bladder turnup is repositioned and then inflated to wrap the ply endings about the bead.

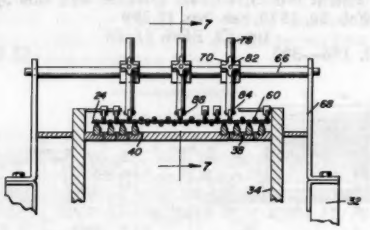
3,676,262
TIRE BUILDING DRUM HAVING A MAGNETIZED SURFACE
Jean Leblond, Compiegne, France, assignor to Uniroyal Englebert France S.A., Paris, France
Original application Apr. 1, 1968, Ser. No. 717,786. Divided and this application Mar. 4, 1970, Ser. No. 19,134
Claims priority, application France, July 6, 1967, 113,452
Int. Cl. B29h *17/16*
U.S. Cl. 156—417 **11 Claims**

A tire building machine, comprising a radially expansible and contractable, breaker-tread assembly building drum having a magnetized outer surface for retaining building alignment of metallic cord breaker plies during building of the assembly, a pair of variably spaced tire carcass support and shaping discs coaxial with but spaced from the building drum and providing for direct inflation of a first stage carcass supported thereon, a radially expansible and contractable and axially movable transfer ring for transferring breaker-tread assemblies from the drum



to carcasses on the shaping discs, and movable, conical, shaping rings engageable with the carcass sidewalls and limiting same to a predetermined pattern during inflation of the carcass.

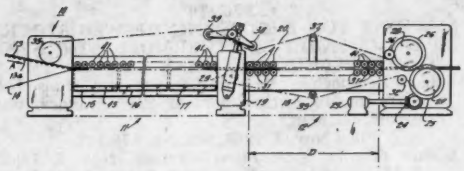
3,676,263
MACHINE FOR MAKING STRESS LAMINATED PANEL
Lucien E. Tisdale, Monroe, La., assignor to Ridge Ply, Inc.
Filed Mar. 26, 1970, Ser. No. 22,850
Int. Cl. B31f *1/24*
U.S. Cl. 156—462 **8 Claims**



A corrugated laminated panel in which a multiplicity of flat webs of paper are glued together and while the glue is still soft, the laminated web is fluted or corrugated longitudinally in a converging process which convolutes the individual plies of the laminated panel, incrementally stretching the fibers on the outside of the bends and conversely compressing the fibers on the inside of the bends. The fluting machine includes a drag shoe engaging a transversely curved surface to impart drag against the laminated sheet to assure that the sheet will stay smooth and eliminate slack. The fluting machine also includes adjustable pressure points which may be adjusted to assure uniformity of the flutes formed in the web. The fluting machine also includes spring loaded fingers to remove variations in flute development to further assure uniformity of the flutes. A drying tunnel is provided with guide rods providing a downward force to hold the laminated sheet in contact with supporting belts in the drying tunnel, and is heated by an air system including air impingement on the panel at relatively high velocity which dries the adhesive in the panel and at the same time serves to retain the panel or sheet on the supporting belt assembly therefor.

3,676,264
SHORTENED APPARATUS FOR PRODUCING CORRUGATED BOARD

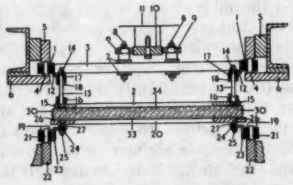
Lawrence J. Saunders, Elmont, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.
Continuation-in-part of application Ser. No. 692,529, Dec. 21, 1967. This application Nov. 26, 1969, Ser. No. 880,307
Int. Cl. B31f *1/20*
U.S. Cl. 156—470 11 Claims



The length of a machine for producing corrugated board is substantially reduced by shortening the heating section where the glue gels and/or the pulling section which receives the corrugated board web after it passes through the heating section. Shortening of the heating and/or pulling sections is achieved by constructing the rollers providing the loading on the upper conveyor belt common to both the heating and pulling sections with diameters within the range of 1½" to 3" and positioning these rollers with spacings between centers that are, on average, 1.1 to 1.3 times roll diameter for steel rollers in the range of 80" to 105" in length.

3,676,265
MANUFACTURE OF LAMINATED ARTICLES

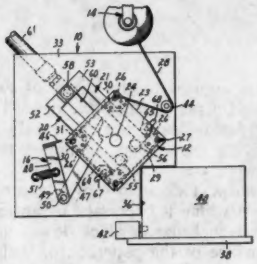
Harry Edwards, Manchester. England, assignor to Imperial Chemical Industries Limited, London, England
Filed June 16, 1970, Ser. No. 46,740
Claims priority, application Great Britain, June 17, 1969, 30,617/69
Int. Cl. A23c *3/00;* B29b *5/04*
U.S. Cl. 156—500 9 Claims



Apparatus for the continuous manufacture of laminated foam articles, comprising a foam dispensing means for applying foam-forming ingredients to sheet material which is to form one of the facings of the laminate and a conveying means for causing that sheet together with another sheet which is to form the other facing to move parallel to each other while the foam core is formed between them, the conveying means consisting of upper and lower parts one or both of which can move up or down with respect to the other part and exerting a predetermined constant pressure on the components of the laminate. The conveying means is characterised in that each of its movable parts comprises an endless series of slats mounted parallel to one another and transversely to their direction of motion and each independently carried on one or more endless chains by means whereby each slat is yieldingly urged outwardly from the chain or chains into contact with a sheet of facing material. The apparatus is of particular value for the production of laminated articles in which at least one of the facing sheets is pre-formed with lateral flanges, ridges or other convex configurations.

3,676,266
ADHESIVE TAPE DISPENSER

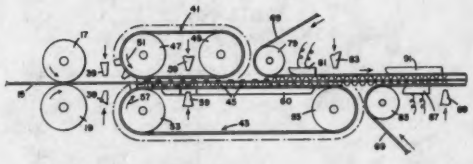
Robert A. Jensen, St. Paul, and Orville M. Johnson, Falcon Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of abandoned application Ser. No. 867,004, Oct. 16, 1969. This application Apr. 21, 1971, Ser. No. 136,242
Int. Cl. B32b *31/10;* B65b *51/06;* B65c *9/36*
U.S. Cl. 156—521 10 Claims



A pressure-sensitive adhesive tape dispenser in which a rotatable member is formed with a plurality of spaced peripheral tape support areas from which pins extend to pierce and support a length of tape with the adhesive side out to provide advancing and positioning of the tacky tape surface for application and in which the tape length may be severed with the severed length supported at its ends by pins on two adjacent support areas for application.

3,676,267
APPARATUS FOR MAKING CELLULAR STRUCTURES

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Original application Mar. 19, 1968, Ser. No. 714,231, now Patent No. 3,616,025. Divided and this application July 21, 1970, Ser. No. 56,815
Int. Cl. B32b *31/18*
U.S. Cl. 156—523 3 Claims



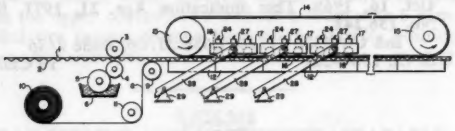
Apparatus for making a cellular structure having a plurality of walls extending along intersecting planes and together providing abutting cells, such walls being connected at their locations of intersection by cruciform sections and formed by flexing portions of a slit web material into planes disposed at angles to the plane of the original web material.

3,676,268

MACHINE FOR MAKING DOUBLE FACED CORRUGATED PAPERBOARD COMPRISING A PLURALITY OF ROWS OF AXIALLY SPACED, STAGGERED PRESSURE ROLLS

Helmut Brandenburg, Wuppertal, and Hansludwig Beck, Bochum, Germany, assignors to Gebr. Eickoff, Maschinenfabrik und Eisengiessari m.b.H., Bochum, Germany

Filed Oct. 26, 1970, Ser. No. 83,869
Claims priority, application Germany, Nov. 14, 1969, P 19 57 270.4
Int. Cl. B31f 1/20
U.S. Cl. 156—548 8 Claims



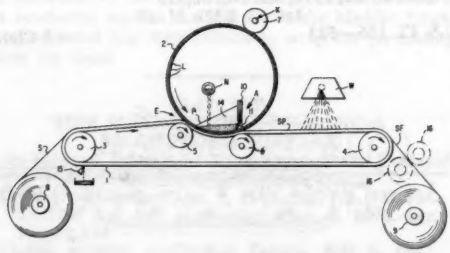
Adhesive is applied to the crests of the corrugations of a corrugated paper sheet, to the opposite side of which a flat paper facing sheet has previously been attached. A second facing sheet then is applied to the adhesive-carrying corrugations to form a double faced corrugated paperboard strip. This strip moves across heating plate means, against which it is pressed by an endless traveling weighting belt that has a slack lower strand engaging the upper surface of the paperboard. Weight is added to the belt by means of pressure rolls that rest on its lower strand with their axes extending transversely thereof. The rolls are held in parallel rows spaced lengthwise of the belt, with several rolls in each row. The rolls in each row are spaced apart axially and are staggered relative to the rolls in the rows beside them so as to press the belt against the paperboard evenly in order to promote uniform bonding of the second facing sheet to the corrugated sheet.

3,676,269

METHOD OF AND APPARATUS FOR COATING FABRICS

Josef Schaetti, 5 Gartenheimstrasse, 8304 Wallisellen, Switzerland

Filed Sept. 4, 1969, Ser. No. 855,236
Int. Cl. B32b 31/08, 31/12
U.S. Cl. 156—548 10 Claims



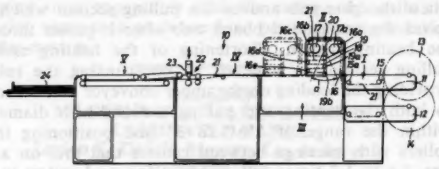
Method and apparatus for applying coatings of thermoplastic or thermosetting resins in a predetermined pattern on one face of a traveling web. The apparatus includes a hollow rotating drum which is perforated in a desired pattern and into which is metered the resin to be applied to the traveling web. The web is held in engagement with the outer periphery of the rotating drum by a traveling belt or any other convenient arrangement which can assure passage of the web in contact with the drum at the same speed as the peripheral speed of the drum. Located interior of the drum is a baffle structure which limits the movement in response to rotation of the drum of the resin and assures that the coating of resin applied to the web through the holes in the drum is of constant thickness. After the web leaves its engagement with the rotating drum, the powdered resin is heated to cause it to sinter and to adhere to the web.

3,676,270

MACHINE FOR PROCESSING OF WEB STOCK, PARTICULARLY OF THERMOPLASTIC SYNTHETIC PLASTIC MATERIAL

Michael Lehmacher, Unterdorfstrasse, and Hans Lehmacher, Im Humnerich, both of 5215 Mondorf uber Troisdorf, Germany

Filed Nov. 3, 1969, Ser. No. 870,542
Claims priority, application Germany, Nov. 8, 1968, P 18 07 689.6; Sept. 12, 1969, P 19 46 269.2
Int. Cl. B32b 31/08; B65h 17/42
U.S. Cl. 156—553 29 Claims



A machine in which a plastic film web, continually unwound from a supply roll passes through a film motion equalizing take-up mechanism from which it is drawn generally horizontally stepwise by advance rolls intermittently actuated to permit seam welding, severing, punching, and other film working operations—as used, for example, in manufacture of bags, sacks or other packaging—to be performed on the web while stationary, at a "tool" station subsequent to the take-up. The take-up mechanism, as a separate assembly including continuous draw rolls and swinging equalizer rolls, is mounted above and shiftably horizontally along the general web path, so that the spacing from the take-up to the tool station may be kept short for better and safer feed as permitted by the tooling used. With spaced pairs of draw rolls commonly driven by a continuous flexible chain or belt drive and establishing a reach of intermittently moved web along which one or more process step tools or stations are locatable, the first draw roll pair is also mounted on the shiftable take-up, and the flexible element is at one end supported by a rotating idler shiftable to change belt tension as required by or for the draw roll shift. By dividing the advance rolls and idler each at mid-length into aligned halves connectable to rotate unitarily and disconnectable for independent rotation and providing separate belt drives on each side, single wide webs or two distinct webs (with likewise divided tooling where appropriate) may be processed through a single two-section shiftable take-up, and with respective separately shiftable take-ups plastic film products of different lengths may be fabricated. Two spaced take-ups are disclosed along one web so that continuous-intermittent-continuous motion sequence of a web is available; also a single take-up, shiftable away from the supply roll, so that tooling may be used carrying out operations on the web while moved continuously such as slitting or cylinder printing in a machine carrying out also intermittent type operations. Also disclosed is modular construction for the take-up and for other operating sections of a film working machine.

3,676,271

APPARATUS FOR APPLYING A STRIP MEMBER TO A CYLINDRICAL CONTAINER BODY

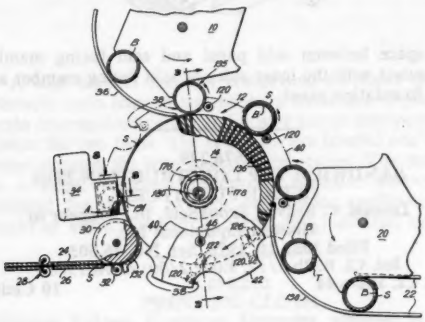
Walter Thomas Hake, Wyckoff, N.J., and Henry Gilbert Stieglitz, Cary, Ill., assignors to American Can Company, New York, N.Y.

Original application Oct. 23, 1967, Ser. No. 677,413, now Patent No. 3,524,006, dated Aug. 11, 1970. Divided and this application Mar. 25, 1970, Ser. No. 25,617

Int. Cl. B32b *31/10*; B65b *61/18*

U.S. Cl. 156—567 6 Claims

In applying to container bodies plastic seam release



strips which are adapted to be stripped from the sealed container to provide an easy-opening feature, a rotating container body and a strip member are moved along substantially concentric, parallel paths to a location where the leading end of the strip member is brought into substantial tangential contact with the rotating body, whereupon the strip member is transferred to and wrapped around the rotating container body.

3,676,272

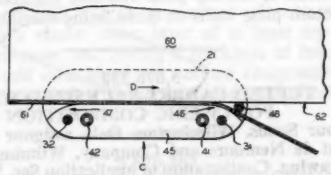
HAND TOOL FOR APPLYING EDGE BANDING TO LAMINATED PLASTIC BOARDS

Kenneth N. White and Harold E. Meyer, both % White-Meyer Wood Products, Inc., 141st and Rte. 45, Orland Park, Ill. 60462

Filed May 8, 1970, Ser. No. 35,714

Int. Cl. B32b *31/10, 31/20*

U.S. Cl. 156—574 8 Claims



A hand tool comprises two space parallel plates floating relative to each other, on a pair of bias springs. The plates fit over the edges of a laminated plastic board. A guide wall positioned between these plates applies a pressure on a strip of edge banding plastic, forcing it against the edges of the laminated board, having an adhesive previously applied thereto. The length of the parallel plates is adequate to insure an alignment of the edge banding strip and the laminated board before there is a tack between the edge banding strip and the board.

3,676,273

FILMS CONTAINING SUPERIMPOSED CURVED CONFIGURATIONS OF MAGNETICALLY ORIENTATED PIGMENT

Irving Stuart Graves, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 30, 1970, Ser. No. 59,680

Int. Cl. B44c *3/02*; C09d *5/28*; C09j *5/00*

U.S. Cl. 161—3 9 Claims

A pigmented film comprising a film of film-forming material and contained in the film, magnetically orientable pigment that is orientated in superimposed curved configurations.

3,676,274

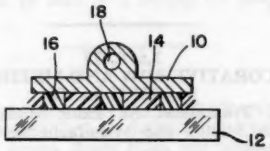
DISTORTION-FREE MIRROR ATTACHED TO A METALLIC HOLDER

Albert J. Matulis, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Army

Original application Oct. 2, 1967, Ser. No. 672,386. Divided and this application May 29, 1970, Ser. No. 38,872

Int. Cl. B44f *1/00*; G02b *5/08*

U.S. Cl. 161—4 1 Claim



A method for securing a mirror to its metal holder by the use of an adhesive containing a plurality of shims imbedded therein so that there are only point contacts between the mirror and said metal holder and the resolution of the mirror is practically unaffected by distortion of the metal holder.

3,676,275

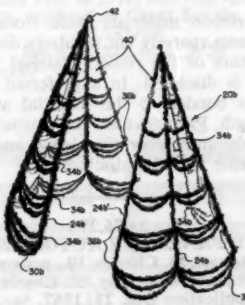
DECORATIVE TREE COVERING FOR ORNAMENTING AN ARTIFICIAL TREE

Seymour D. Sloane, 7938 210th St., Flushing, N.Y. 11364

Filed Oct. 19, 1970, Ser. No. 81,762

Int. Cl. A47g *33/08*

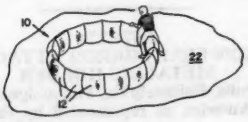
U.S. Cl. 161—14 9 Claims



A decorative tree covering including a tinsel garland attached to backing strips in a pre-designed pattern. The tall covering is adapted to be draped, in tent-like fashion, over a tree, such as a Christmas tree, for ornamentation

purposes. An alternate embodiment utilizes a web network for supporting the garland; the tree is further adorned with bows, etc., attached to the network.

3,676,276
ENDLESS INFLATABLE DEVICE
Sanford Hirshen and Sim Van der Ryn, Berkeley, Calif., assignors to Hirshen/Van der Ryn, Berkeley, Calif.
Filed Dec. 11, 1969, Ser. No. 884,109
Int. Cl. A63g *31/00*
U.S. Cl. 161—17 **6 Claims**



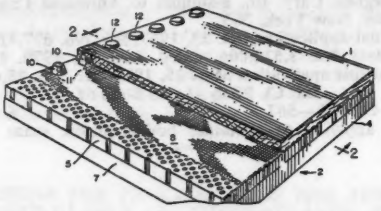
A device comprised of a plurality of inflatable cells arranged in end-to-end relationship to form an endless body with each cell having inflation means to permit the same to be inflated independently of the other cells. The device can be made from an initially flat sheet of a suitable material capable of being heat sealed, such as vinyl or the like.

3,676,277
DECORATIVE BOW AND METHOD OF MAKING SAME
Bernard S. Truskolaski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 18, 1970, Ser. No. 99,448
Int. Cl. D04d *7/06*
U.S. Cl. 161—9 **8 Claims**

Lace-like ribbon materials made from interconnected pliable filaments sparsely but regularly distributed so that a major portion of the ribbon material is comprised of open spaces is disclosed. In a preferred embodiment, a drawstring is bonded to the material at spaced points along its length. Prefabricated bow forms produced from said materials and decorative bows and a method of producing same are also disclosed.

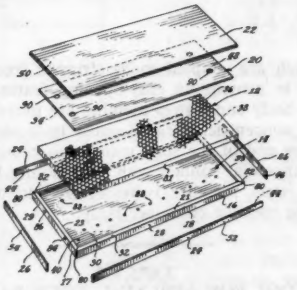
3,676,278
PADDED PANEL FOR AUTOMOBILE DOOR
John S. Stewart, St. Charles, Ill., assignor to Hawley Products Company, St. Charles, Ill.
Original application Dec. 21, 1967, Ser. No. 692,426. Divided and this application Nov. 19, 1969, Ser. No. 878,019
Int. Cl. B32b *3/00, 5/14*
U.S. Cl. 161—43 **3 Claims**

A cushioned article is provided comprising a molded fiber foundation panel having porous and non-porous felted fibrous areas, the porous areas having a sufficiently lower fiber density to permit gases to escape therethrough, a non-porous facing member spaced from said foundation panel, and an expanded cellular cushioning substance in



the space between said panel and said facing member in contact with the inner sides of said facing member and said foundation panel.

3,676,279
SANDWICH TOP CONSTRUCTION FOR OFFICE FURNITURE
Donald V. Beaver, Brookfield, Ill., assignor to All-Steel Equipment Inc.
Filed June 16, 1970, Ser. No. 46,605
Int. Cl. B32b *3/12*; E04c *2/00*; A47b *13/08*
U.S. Cl. 161—44 **10 Claims**

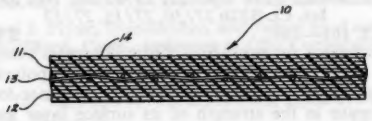


A top structure for office furniture such as desks, tables, and credenzas, which is of a sandwich construction comprising a bottom plate defining upstanding marginal walls about its rim each including an inturned flange with the flanges being in coplanar relation, a cellular filler or core structure bonded to the bottom plate within but extending short of the bottom plate marginal walls, a top plate bonded to the core structure, and sheets of finishing material bonded to the top plate and side surfaces defined by the bottom plate walls in close fitting relation.

3,676,280
TUFTED CARPET BACKSIZED WITH POLYMERIC COMPOSITION
Seymour Sands, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation of application Ser. No. 714,813, Mar. 21, 1968, which is a continuation-in-part of application Ser. No. 549,461, May 12, 1966, now Patent No. 3,390,035, dated June 25, 1968, which in turn is a continuation-in-part of application Ser. No. 241,548, Dec. 3, 1962. This application Aug. 21, 1970, Ser. No. 66,144
Int. Cl. D05c *17/02*
U.S. Cl. 161—67 **2 Claims**

This invention relates to tufted carpets which are backsized with a polymeric material containing a copolymer of ethylene and vinyl acetate. In the process of making the carpet the polymeric composition is applied to the back side of the carpet as a hot-melt.

3,676,281
SIGN SUPPORT MATERIAL
Robert P. Logan, Tustin, Calif., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio
Filed July 29, 1970, Ser. No. 59,104
Int. Cl. B32b *15/14, 29/02*
U.S. Cl. 161—85 3 Claims



A sign support material comprising an upper face of phenolic resin impregnated paper, a lower face of phenolic resin impregnated paper, and a wire screen interposed between the two faces. The two faces are bonded one to the other through the wire screen therebetween. The material is a rigid, compact, reinforced laminate particularly adapted for use in exterior or outdoor applications as highway signs, commercial signs, and industrial signs.

3,676,282
PRINTING CLOTH
Edmund Volmer, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Mar. 20, 1970, Ser. No. 21,238
Claims priority, application Germany, Mar. 20, 1969, P 19 14 142.5
Int. Cl. B32b *5/16;* B41f *29/00*
U.S. Cl. 161—87 2 Claims

A printing cloth, especially for offset printing, which includes: a base layer of elastomeric material having a maximum thickness of 0.7 mm. and comprising at least one fabric ply of fiber material having a high modulus of elasticity, a volume compressible layer of elastomeric material having a thickness of at least 0.6 mm. and having embedded therein a high percentage of cork particles, and a highly elastic cover layer of at least one solvent resistant polymer and having a thickness of from 0.2 to 0.5 mm., said base layer and volume compressible layer and cover layer being placed upon and vulcanized to each other.

3,676,283
LAMINATE AND PROCESS FOR LAMINATING WITH POLYTHIOL POLYENE REACTION PRODUCT
Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967. This application Aug. 14, 1969, Ser. No. 850,067
Int. Cl. B32b *21/08;* C23b *5/60;* C08g *45/06*
U.S. Cl. 161—88 34 Claims

This invention is directed to a method and means for laminating superimposed layers or plies of the same or different material, e.g., wood, fabric, glass, brick, elastomer, leather, paper, plastic or metal, by adhering said layers with a curable liquid adhesive composition comprising a polyene and a polythiol which, on exposure to ionizing radiation or other free radical generating agent, cures to a solid adhesive under ambient conditions thereby bonding the layers into a laminated product. The adhesive system is especially useful in bonding plywood and veneered wood.

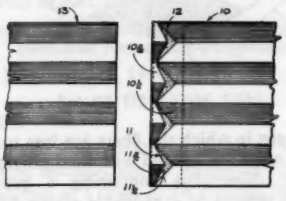
3,676,284
REINFORCED FOAM POLYSTYRENE LAMINATE
Elizabeth Blommers, Monroeville, Pa., assignor to Koppers Company, Inc.
No Drawing. Filed Mar. 2, 1971, Ser. No. 120,322
Int. Cl. B32b *5/18, 17/10*
U.S. Cl. 161—93 10 Claims

A reinforced foamed polystyrene laminate comprising a first layer of foamed polystyrene, a second layer of glass cloth, and an adhesive layer formed from (a) a resin mixture of a phenol resorcinol-formaldehyde resin and a polysulfide resin, and (b) a hardener for the resin mixture. The adhesive layer adhesively joins the polystyrene layer to the secondary layer. The resin mixture and hardener can also be used as a coating for foamed polystyrene.

3,676,285
LAMINATES CONTAINING STANNOUS COMPOUND IN BONDING RESIN
Maynard C. Agens, Burnt Hills, and Simon W. Kantor, Schenectady, N.Y., assignors to General Electric Company
Filed Mar. 27, 1969, Ser. No. 811,012
Int. Cl. B32b *5/28, 15/02*
U.S. Cl. 161—93 8 Claims

The invention relates to a laminated structure comprising a substrate having on at least one of its two major surfaces at least one absorbent insulating lamina which has been impregnated and integrally bonded to said surface with a synthetic resin having incorporated therein a stannous compound.

3,676,286
CORRUGATED COVERS
Royston L. Moseley, Bewdley, and Peter M. Knowles, Kidderminster, England, assignors to Henry Beakbane (Fortox) Limited, Kidderminster, England
Filed Feb. 2, 1970, Ser. No. 7,517
Claims priority, application Great Britain, Feb. 5, 1969, 6,153/69
Int. Cl. B32b *3/10, 3/28*
U.S. Cl. 161—109 4 Claims



A corrugated cover component is formed from a sheet formed with parallel fold lines and a row of cut-outs. The

cut-outs permit the part of the sheet on one side of the row to be corrugated inversely relative to the part on the other side of the row.

3,676,287

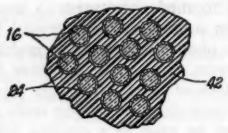
GLASS FIBER-REINFORCED ELASTOMERS

Martin C. Flautt, Granville, Leland G. Moran, Newark, and Frank P. McCombs, Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Sept. 8, 1970, Ser. No. 70,252

Int. Cl. B29h 17/28; B32b 25/02

U.S. Cl. 161—140 13 Claims



This invention is addressed to the improvement in the bonding relationship of glass fibers with elastomeric materials in the manufacture of glass fiber-reinforced elastomeric products wherein individual glass fibers are treated with a composition including a polyamide, which is preferably a microcrystalline polyamide, a lubricant, an organo silicon compound coupling agent and a gel agent to form a thin coating on the individual glass fibers, and wherein the individually coated glass fibers may be further processed into glass fiber bundles and impregnated with an elastomer compatible material.

3,676,288

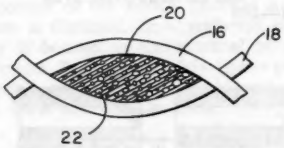
LOW-DENSITY BONDED NONWOVEN FABRICS AND PROCESS THEREFOR

Albert G. Hoyle, Lowell, Mass., assignor to The Kendall Company, Boston, Mass.

Filed May 4, 1970, Ser. No. 34,493

Int. Cl. B32b 5/02, 5/22

U.S. Cl. 161—158 7 Claims



Fibrous webs in which the fibers are free to move relative to each other are bonded with fluid polymeric binder solutions or dispersions containing a proportion of microspheric spheres of expandable plastic filled with an expandable low-boiling liquid or vapor. In drying the fluid from the binder, the microspheres are expanded in volume but not ruptured, leading to the formation of nonwoven fabrics with low density and high fluid absorbency.

3,676,289

TECHNIQUES FOR FORMING SEALS BETWEEN POLYETHYLENE AND FLUOROCARBON POLYMERS

Katsuyuki Hara, Plainfield, and Harold Schonhorn, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,035

Int. Cl. B32b 27/30, 27/16, 27/32

U.S. Cl. 161—189 5 Claims

A technique for preparing plastic laminates comprising a low surface energy polymer bonded with polyethylene involves modifying the surface of the polymer to effect an increase in the strength of its surface layer and subsequently melting polyethylene upon the resultant modified polymer.

3,676,290

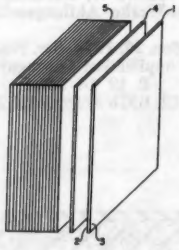
POLYVINYL FLUORIDE SURFACED LAMINATES

Richard R. Hetrick, Bainbridge, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 15, 1969, Ser. No. 824,769

Int. Cl. B32b 27/08, 27/42, 27/30

U.S. Cl. 161—189 6 Claims



A weatherproof outdoor laminate is made from a core layer impregnated with a phenolic resin, a print sheet layer impregnated with an aminotriazine-aldehyde resin and an outer polyvinyl fluoride layer having at least one adherable activated side, wherein the activated side of the polyvinyl fluoride outer layer is bonded directly to the print sheet layer without the use of an adhesive layer.

3,676,291

POLYESTERAMIDES

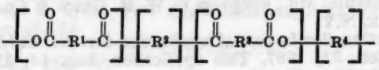
Ray C. Christena, Wichita, and Earnest L. Johnston, Clearwater, Kans., assignors to Vulcan Materials Company, Birmingham, Ala.

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,492

Int. Cl. B32b 17/10, 27/36; C08g 20/30

U.S. Cl. 161—195 12 Claims

A polyesteramide of the formula:



wherein:

R^1 is chlorinated or brominated alkylene, or chlorinated or brominated arylene;

R^2 is aminoalkyleneoxy or oxyalkyleneamino;

R^3 is alpha-beta ethylenically unsaturated alkylidene; and R^4 is alkylene or alkylidene.

3,676,292

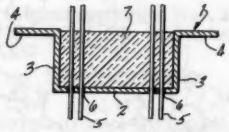
COMPOSITES OF GLASS-CERAMIC-TO-METAL, SEALS AND METHOD OF MAKING SAME

Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, Conn., assignors to Olin Corporation

Filed Oct. 7, 1970, Ser. No. 78,899

Int. Cl. B32b *17/06*; H01j *5/32*; H05k *5/06*

U.S. Cl. 161—196 11 Claims



Glass or ceramic-to-metal composites or seals wherein the glass or ceramic is bonded to a copper base alloy having a thin film of Al_2O_3 on its surface. The Al_2O_3 film comprises at least 10%, up to 100%, of the oxide film thickness on the metal. The copper base alloy preferably contains 2 to 10% aluminum with C.D.A. Alloy 638 being the most preferred alloy. The invention also includes the process of bonding the glasses or ceramics to the metal. Substantial mismatch between the coefficient of the thermal expansion of the glasses or ceramics and the copper base alloys may be tolerated in accordance with this invention.

3,676,293

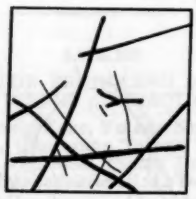
LAMINATED ARTICLE

Bernard A. Gruber, Boxford, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation of application Ser. No. 413,498, Nov. 24, 1964, which is a division of application Ser. No. 80,402, Jan. 3, 1961, now Patent No. 3,246,950, which in turn is a continuation-in-part of application Ser. No. 803,176, Mar. 31, 1959. This application Apr. 22, 1970, Ser. No. 28,294

Int. Cl. B32b *9/04*

U.S. Cl. 161—206 1 Claim



A shaped laminated object of reinforced fibrous silicon carbide comprises a layer of a skeletal structure of fibrous silicon carbide which crystallizes in the cubic crystalline form as fibers which have a length to diameter ratio of at least 5, the said fibrous silicon carbide layer being intimately bonded with at least one layer of carbon. Such objects are characterized by extreme strength and high temperature stability and may be useful as nose cones for missiles and rockets.

3,676,294

METHOD AND APPARATUS FOR FEEDING FIBERS TO HEADBOX IN PAPER-MAKING USING AN ELECTRICAL FIELD

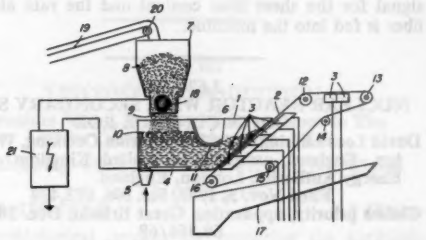
Fritz Opderbeck, Buderich, Dusseldorf, Theodor Ploetz, Hosel, Rudolf Thamm, Viersen, and Popko J. Westerhuis, Baal, Germany, assignors to Feldmuehle Aktiengesellschaft, Dusseldorf-Oberkassel, Germany

Filed June 23, 1970, Ser. No. 49,123

Claims priority, application Germany, June 25, 1969, P 19 32 169.8

Int. Cl. D21f *11/02*, *1/02*

U.S. Cl. 162—192 10 Claims



A method producing nonwoven sheet material comprising in whole or in part staple fibers between about ¼ to 1½ inches long which includes the steps of feeding the fibers dry at a predetermined rate to the breast box of a wet laid forming machine by means of an electrical field which accelerates them toward the surface of the aqueous medium in the breast box. The electrical field is produced either by the direct application of a voltage to the fibers or by spontaneously charging them with static electricity. The breast box according to the invention includes an electrode which maintains the medium at ground potential. The apparatus also includes a fiber basket with a perforated bottom above the breast box through which the fibers are distributed into the medium. The bottom of the basket comprises an electrode for charging the fibers. The breast box also includes a baffle plate which directs the immersed fibers downwardly into the region of the sheet forming zone where they are uniformly mixed with the medium before being laid down on a forming wire.

3,676,295

NONINTERACTING CONTROL OF MOISTURE AND FIBER CONTENT OF FIBROUS SHEET DURING MANUFACTURE

James S. Rice, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

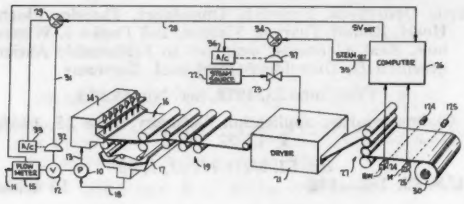
Filed Sept. 12, 1969, Ser. No. 857,324

Int. Cl. D21f *1/06*, *5/06*

U.S. Cl. 162—198 9 Claims

Moisture and fiber content of a fibrous sheet are controlled during manufacture by measuring the sheet moisture downstream of a dryer in the manufacturing machine, as well as the sheet fiber content. The fiber content and moisture measurements are combined to control the dryer drying rate in such a manner that changes in the rate at which fiber is fed to the machine are compensated for by changes in the dryer drying rate so that changes in the

moisture content of the sheet are greatly minimized. The rate of fiber flow is controlled in response to an error



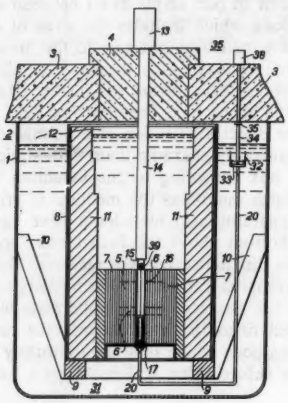
signal for the sheet fiber content and the rate at which fiber is fed into the machine.

3,676,296

NUCLEAR REACTOR WITH SECONDARY SHUT DOWN CONTROL ROD

David Lees Linning and Charles Brian Cowking, Warrington, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 3, 1969, Ser. No. 873,438
Claims priority, application Great Britain, Dec. 20, 1968, 60,866/68
Int. Cl. G21c *7/08*
U.S. Cl. 176—35 **2 Claims**



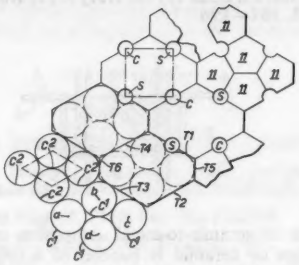
Secondary shut down equipment for a liquid metal cooled fast nuclear reactor. The reactor is of the type comprising a core structure having a central active region, the core structure being supported on a diagrid within a vessel containing the liquid metal coolant. Control rod tubes extend vertically above, through and below the active region of the core structure. Normal control rods operate in the parts of the control rod tubes above the core structure. The secondary shut down equipment comprises a rigid absorber element in the lower end of each control rod tube below the active region of the core structure. The absorber elements are insertable into the active region of the core structure by compression springs which are held in a compressed state within the lower end of the control rod tube by the absorber element. Hold down of the absorber element is by differential pressure existing between liquid metal coolant in the control rod tube above and below a flange on the absorber element which seals with the wall of the control rod tube.

3,676,297

PENTAGONAL CORE BLOCKS FOR GAS COOLED NUCLEAR REACTORS

Compton Alexander Rennie, Wareham, George Edward Lockett, Parkstone, and Samuel Brittan Hosegood, Wareham, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 9, 1968, Ser. No. 782,295
Claims priority, application Great Britain, Dec. 21, 1967, 58,245/67
Int. Cl. G21c *3/04, 5/14*
U.S. Cl. 176—58 **3 Claims**



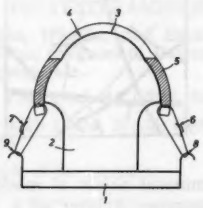
A gas cooled reactor having a core composed of a plurality of similar replaceable fuel bearing blocks of moderator material. The blocks are substantially pentagonal in cross section and assembled side by side with the flanks of one block engaging the flanks of adjacent blocks. The blocks are interlocked due to their shape such that upon removal of a block a neighboring block will not topple into the void so created. The corners of adjacent blocks are grooved to receive longitudinal members which are withdrawable to provide looseness between the flanks of adjacent blocks.

3,676,298

PROCESS FOR THE TREATMENT OF ORGANS TO BE USED AS GRAFTS, NOTABLY ANIMAL OR HUMAN CORNEAS

Madeleine Csanadi Moczar and Elemer Moczar, Gif-sur-Yvette, and Paul Bertrand Payrau, Paris, France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR), Courbevoie, France

Filed June 20, 1970, Ser. No. 42,748
Claims priority, application France, June 3, 1969, 6918127
Int. Cl. A61f *1/16, 9/00*
U.S. Cl. 195—1.7 **9 Claims**



The invention relates to the treatment of corneas removed from human beings or animals and adapted to be subsequently grafted.

According to the process of the invention, products capable of establishing bridge-links between the protein

molecules of the corneas are used to treat excised corneas to reduce the capacity of inflation of said corneas when they have been grafted while retaining their transparency. These products are notably dialdehydes.

The invention applies more particularly to transfixion grafts for the surgical treatment of fistula corneas, pterygium and especially chronic edema of the cornea.

3,676,299

MICROBIAL PRODUCTION OF NOVEL HYDROXYPHENYL KETOBUTYRIC ACIDS

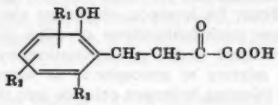
Richard L. Raymond, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Original application Nov. 28, 1967, Ser. No. 686,329. Divided and this application Oct. 22, 1970, Ser. No. 83,152

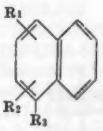
Int. Cl. C12d *1/00*

U.S. Cl. 195—28 R **5 Claims**

Novel hydroxyphenylketobutyric acids having the structural formula:



wherein R_1 and R_2 are hydrogen or lower alkyl groups having from one to three carbon atoms; R_3 is hydrogen, and wherein R_1 and R_2 may be the same or different, are prepared by subjecting naphthalene or alkyl-substituted naphthalenes having the structural formula:



wherein R_1, R_2 and R_3 are as defined above, to the oxidizing activity of the microorganisms *Nocardia coeliaca*, ATCC No. 21,146, *Nocardia nov.* sp., ATCC No. 21,145, or Streptomyces species, ATCC No. 21,147.

3,676,300

METHOD FOR PRODUCING MONOACYL DERIVATIVES OF ANTIBIOTIC T-2636C

Hiroichi Yamamoto, Kobe, Takashi Suzuki, Amakasaki, Eiji Higashide, Takarazuka, Takeshi Fugono, Kawanishi, and Komei Mizuno, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing, Filed Mar. 31, 1970, Ser. No. 24,384

Claims priority, application Japan, Mar. 31, 1969, 44/25,096

Int. Cl. C12d *9/00*

U.S. Cl. 195—29 **8 Claims**

14-monoacyl derivatives of Antibiotic T-2636C are produced by reacting T-2636C with an organic acid ester in the presence of a culture of a microorganism of the genus Streptomyces, Aspergillus, or Trametes or in the presence of processed matter derived from said cultures.

3,676,301

PROCESS FOR PREPARING L-HISTIDINE

Junichi Nakajima, Kazumi Araki, and Kenzo Morinaga, Hofu, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,141

Claims priority, application Japan, Apr. 10, 1969, 44/27,270

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 **5 Claims**

L-histidine is prepared by a fermentation process comprising culturing in a suitable nutrient medium a mixture of a microorganism capable of producing L-histidinol and a yeast capable of converting L-histidinol into L-histidine.

3,676,302

LINCOMYCIN PRODUCTION

Jeronimo Visser, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 28, 1970, Ser. No. 67,966

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **3 Claims**

Microbiological process for preparing the antibiotic lincomycin wherein the concomitant production of lincomycin B (4'-depropyl-4'-ethyllincomycin) is significantly reduced by the addition of an effective amount of propylproline to the fermentation medium. The reduction of lincomycin B in the fermentation beer results in increased lincomycin recovery from the fermentation beer.

3,676,303

METHOD FOR DETERMINING ENDOHYDROLASES CAPABLE OF BREAKING DOWN POLYSACCHARIDES AND REAGENTS FOR CARRYING OUT THE METHOD

Björn G.-A. Ingelman and Miroslav Ceska, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden

No Drawing. Filed Jan. 14, 1969, Ser. No. 791,177

Claims priority, application Sweden, Jan. 15, 1968, 465/68

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **42 Claims**

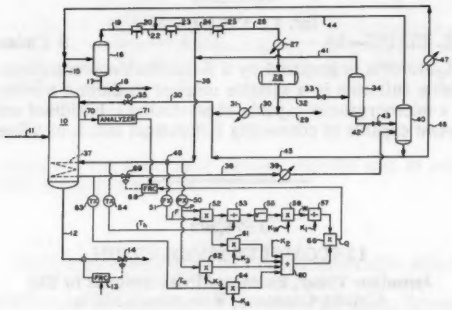
A method for determining endohydrolase which breaks down polysaccharide in an aqueous sample which comprises contacting the sample with a reagent consisting of a water-insoluble but hydrophilic, swellable, enzymatically hydrolyzable three-dimensional network of molecules of either a polysaccharide or an enzymatically hydrolyzable derivative of a polysaccharide. The molecules are crosslinked with bonds of a covalent nature. Also the three-dimensional network presents indicatable substituents bound by means of bonds of a covalent character. The contacting causes a reaction to take place between the enzyme and the reagent whereby water-soluble fragments of the reagent containing indicatable substituents are released. The undissolved reagent is separated from the liquid with the water-soluble fragments of the reagent dissolved therein, after the enzyme has acted upon the reagent for a determined period of time. The indicatable substituents are then determined in at least one of the two phases consisting of the liquid phase and the undissolved reagent material phase as a measure of the enzyme activity. Also, the reagent for determining endohydrolase is provided.

3,676,304

CONTROL OF FRACTIONATION COLUMN REBOILER

James W. Hobbs, Bartlesville, Okla., and George W. Long, Sweeny, Tex., assignors to Phillips Petroleum Company

Filed July 8, 1970, Ser. No. 53,107
Int. Cl. B01d 3/42
U.S. Cl. 202—160 3 Claims



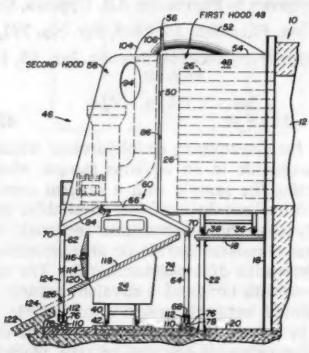
The flow of heat exchange fluid through the reboiler of a fractionation column is controlled in response to a computation of the heat actually supplied by the fluid. The set point of the flow controller is established from a measurement of the separation made by the column or the liquid level in the lower region of the column.

3,676,305

DUST COLLECTOR FOR A BY-PRODUCT COKE OVEN

Walter Cremer, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Nov. 26, 1969, Ser. No. 879,986
Claims priority, application Germany, Dec. 5, 1968, P 18 12 897.7
Int. Cl. C10b 33/00
U.S. Cl. 202—263 8 Claims



A first hood member extends around the coke guide and is movable longitudinally with the coke guide along the side of the coke oven battery. The first hood encloses the coke guide and is in sealing relation with an aligned coking chamber and has an open front portion for the coke being pushed. A dust withdrawal conduit extends forwardly from the upper section of the first hood. A second hood has a frame member supported on a ground level track and is movable longitudinally along the side of the coke oven battery independently of the coke guide. The second hood has an enclosed portal portion in which the quench car and the locomotive are positioned. The second hood has an upwardly extending portion with an open rear end that mates with the open front end of the first hood so that a continuous enclosure is formed when the upper portion of the second hood is aligned with the opening in the first hood and the dust created while the coke is being pushed is evolved within either the first or second hood. A first dust removal device is positioned on the roof of the portal and has a conduit with an open end operable to be pushed in overlying relation with the open end of the conduit extending forwardly from the first hood. A second dust removal device is positioned on the roof of the frame member and is connected by means of a conduit to the upper portion of the second hood.

3,676,306

SEPARATION OF PURIFIED VINYLIDENE CHLORIDE

James I. Jordan, Jr., 1512 Kenilworth Parkway, Baton Rouge, La.

Filed July 8, 1970, Ser. No. 53,329
Int. Cl. B01d 3/34; C07c 17/40
U.S. Cl. 203—8 3 Claims

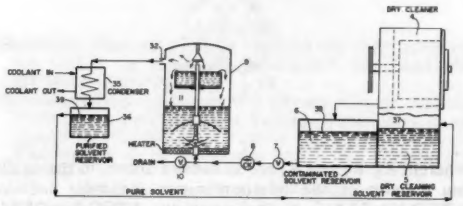
The normal tendency of vinylidene chloride to polymerize on heating is repressed by the addition of hydrogen chloride to the system. Thus, for instance, vinylidene chloride can be separated from methylchloroform or other higher boiling compounds without undue polymerization by fractionally distilling the mixture at atmospheric or superatmospheric pressure and injecting hydrogen chloride into the distillation system.

3,676,307

PERCOLATOR DISTILLATION SYSTEM

Charles A. Black, Rockfield, Ky., assignor to Detrex Chemical Industries, Inc., Detroit, Mich.

Filed May 8, 1969, Ser. No. 823,038
Int. Cl. B01b 1/02; D06f 29/00; B01d 19/02, 35/18
U.S. Cl. 203—20 7 Claims



A system is disclosed wherein a liquid solvent, susceptible of foaming, is heated within a confined volume and thereby raised to a high pressure, causing same to rise through a vertical stand pipe and be ejected into an unconfined volume of lower pressure, whereupon the solvent is partially vaporized. The unvaporized solvent is caused to impact against a deflector, such impacting in combination with the lower pressure acting to maintain the solvent in a foamless state. It is then channeled through an accumulator prior to re-distillation.

3,676,308

ELECTROLYTIC CODEPOSITION OF POLYVINYLIDENE AND COPOLYMER PARTICLES WITH COPPER

Henry Brown, Huntington Woods, Mich., assignor to Udylite Corporation, Warren, Mich.

Filed June 19, 1969, Ser. No. 834,892
Int. Cl. C23b 5/48, 5/20
U.S. Cl. 204—16 12 Claims

Fine particles of organic resins derived from vinylidene chloride such as Saran F–220 resin, a copolymer of vinylidene

chloride and acrylonitrile, densely codeposit with copper when dispersed in aqueous acidic copper electroplating baths. These fine particles of polyvinylidene resins codeposit on vertical cathodes to an amazingly high volume percent compared to any other bath-insoluble particles, inorganic or organic. The surfaces of such two-phase copper coatings with their densely imbedded resin particles have anti-seizing properties. Furthermore, when subsequent thin plate is deposited over these copper surfaces with their densely imbedded particles, a finely porous over-lay plate is obtained. Also the resin particles may be dissolved out with solvents to yield porous copper surfaces or porous films.

3,676,309

ALUMINUM WELDING WIRE ELECTRODE WITH AN ALUMINA COATING CONTAINING PHOSPHATE

Allan A. Dolomont, Branford, Conn., assignor to Olin Mathieson Chemical Corporation

Division of Ser. No. 712,586, March 13, 1968, Pat. No. 3,519,779, Continuation-in-part of Ser. No. 650,547, June 30, 1967, Pat. No. 3,378,669, which is a continuation-in-part of Ser. No. 339,853, Jan. 24, 1964, abandoned, Continuation-in-part of Ser. Nos. 374,290, June 11, 1964, abandoned, and Ser. No. 339,880, Jan. 24, 1964, Pat. No. 3,378,668. This application Feb. 4, 1970, Ser. No. 12,505

Int. Cl. C23b *5/58, 9/02, 3/06*

U.S. Cl. 204—27 2 Claims

An aluminum welding wire having a coating thereon and capable of producing porosity free welds after exposure to an atmosphere of 95 percent relative humidity at 100° F. for 30 full days wherein the coating is from 10 to 90 angstrom units thick and consists essentially of alumina and at least 0.001 percent by weight of phosphate.

3,676,310

PROCESS FOR ELECTROCHEMICAL MACHINING EMPLOYING A DIE OF A SPECIAL ALLOY

Frederick T. Wishnie, Seaford, N.Y., assignor to Eutectic Welding Alloys Corporation, Flushing, N.Y.

Division of Ser. No. 664,227, Aug. 2, 1967, abandoned. This application July 9, 1970, Ser. No. 53,644

Int. Cl. B23p *1/00;* B01r *3/06;* C22c *9/06*

U.S. Cl. 204—143 M 4 Claims

Electro-chemical machining die of an alloy comprising the following constituents in the following range of percentages by weight: nickel 5 to 27 percent, castability promoting elements 1.2 to 8 percent, hardness promotion elements .5 to 9.5 percent, with the balance being copper.

3,676,311

BURN-RESISTANT COMPOSITIONS CONTAINING A POLYTHIOL AND A PHOSPHONITRILIC POLYMER

Victor S. Frank, Silver Spring; Eldon E. Stahly, Ellicott City, and Rip G. Rice, Ashton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed April 17, 1969, Ser. No. 817,186

Int. Cl. B01j *1/00;* C08g *23/00, 33/00*

U.S. Cl. 204—159.14 18 Claims

Burn-resistant polymers are prepared by photocuring a mixture of polythiol and a phosphonitrilic polymer containing at least two reactive unsaturated carbon-to-carbon (ene) groups. The photocuring is achieved by exposing the mixture to ultraviolet light. The phosphonitrilic polymer containing at least two reactive ene groups is prepared by reacting a cyclic or linear phosphonitrilic chloride polymer, e.g., $(PNCl_2)_4$, with moieties containing reactive ene groups, e.g., allyl.

3,676,312

AMINOPLAST RESINS PARTICULARLY ADAPTED FOR ELECTROCOATING AND PROCESS FOR PRODUCING THE SAME

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed March 13, 1970, Ser. No. 19,457

Int. Cl. B01k *5/02;* C23b *13/00*

U.S. Cl. 204—181 15 Claims

Aminoplast resins particularly adapted for use in electrocoating are provided by heat reacting a polyamine, such as benzoguanamine, with formaldehyde in the presence of a mixture of etherifying alcohol and a small proportion of an hydroxy carboxylic acid such as dimethylol propionic acid. The reaction is conducted in a single stage in the absence of extraneous acidic or basic catalysts.

3,676,313

REMOVING UNDESIRED POTENTIAL FROM THE BLOCKING ELECTRODE IN A PHOTOELECTROPHORETIC IMAGING SYSTEM

Roger N. Ciccarelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 626,917, March 28, 1967, abandoned. This application Aug. 3, 1970, Ser. No. 60,675

Int. Cl. G03g *13/00*

U.S. Cl. 204—181 8 Claims

Build-up of undesired potential on the blocking electrode in a photoelectrophoretic imaging system during successive imaging operations is prevented by one of several methods. Typically, potential of a sign opposite to that built up may be applied, or the blocking electrode surface may be discharged between imaging cycles.

3,676,314

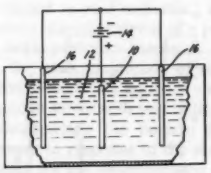
METHOD OF ELECTRODEPOSITING VITREOUS COATINGS ATOP A MULTIAPERTURED SUBSTRATE

Roland T. Girard, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 15, 1969, Ser. No. 885,205

Int. Cl. B01k *5/02;* C23b *13/00*

U.S. Cl. 204—181 6 Claims



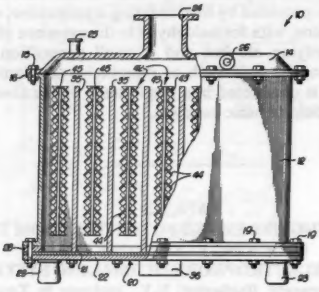
Pinhole-free vitreous enamel coatings are electrophoretically deposited without frothing atop a multi-apertured substrate from an aqueous slurry of vitreous enamel and inert refractory particles by the inclusion of ammonium alginate or gelatine in the slurry in quantities less than 0.3 percent by weight of the water vehicle. Desirably a low ash producing organic film-forming binder, such as an acrylic emulsion, also is included in the bath in quantities less than 0.3 percent by weight water vehicle to enhance the toughness of the deposited film while the presence of minor quantities of an ionic wetting agent serves to enhance the plating characteristics of the bath.

3,676,315

PRODUCTION OF SODIUM CHLORATE

Duane N. Goens, Fullerton, and Thomas W. Clapper, Whittier, both of Calif., assignors to Kerr McGee Chemicals Corp.

Division of Ser. No. 708,819, Feb. 28, 1968, Pat. No. 3,598,715. This application Sept. 28, 1970, Ser. No. 76,306
Int. Cl. C01b *11/26*; B01k *3/04*
U.S. Cl. 204—95 4 Claims



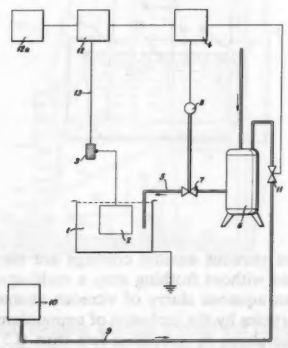
An electrolytic cell comprising a tank having a closed top and an open bottom. An anode closure plate extends over the bottom of the tank to form the bottom wall of the cell. A plurality of vertically positioned anodes are secured to the closure plate and are spaced to receive a cathode member between adjacent pairs of anodes. The electrodes are mounted in the cell in a manner such that they are completely submerged in electrolyte in the cell.

3,676,316

METHOD FOR COATING METAL WORKPIECES WITH WATER SOLUBLE OR COLLOIDAL COLORING MATTER EMULSIFIED IN WATER

Jozsef Domokos; Gyorgy Benedek; Bela Kiss; Laszlo Winkler, and Zoltan Beller, all of Budapest, Hungary, assignors to Hajtomu-es Felvonogyar, Budapest, Hungary

Filed Jan. 16, 1968, Ser. No. 698,273
Claims priority, application Hungary, Jan. 20, 1967, DO-310
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 1 Claim



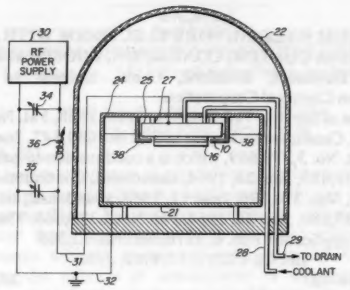
A method is provided for coating metal workpieces with coloring material in a continuous process, by being interconnected to form an anode and are advanced sequentially through a solution of coloring matter in a continuous procedure. The coloring material is contained in a vessel forming a cathode and a coulomb meter integrator-regulating means senses, a time and a current quantum impulse; a valve being provided for controlling the flow of coloring material from a supply to the vessel cathode and being actuated by the aforesaid regulator means.

3,676,317

SPUTTER ETCHING PROCESS

Patrick A. Harkins, Jr., El Cajon, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed Oct. 23, 1970, Ser. No. 83,295
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 5 Claims



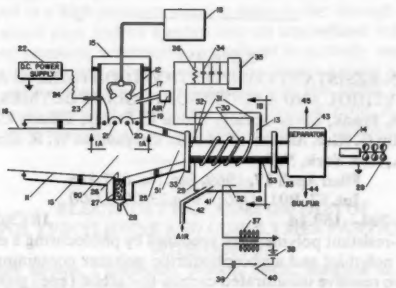
A process of etching high resolution openings in surfaces by sputter etching is disclosed. A mask is first prepared having apertures of shapes corresponding to areas to be etched on a surface. A low sputtering yield material is coated onto the mask. The mask is then placed in a suitable chamber between a source of accelerated and bombard the mask and the body surface beyond mask apertures, atoms are dislodged from the bombarded surfaces and diffuse away. Preferably, this etching action is more rapid on the body than on the mask coating. The low yield coating is reformed as necessary. The mask may be made of any solid material, including those which would be rapidly destroyed if used in a sputter etching system without the low sputtering yield coating.

3,676,318

APPARATUS FOR REMOVING SULFUR DIOXIDE FROM STACK GASES

James L. Lauer, c/o Sun Oil Company, P.O. Box 426, Marcus Hook, Pa.

Division of Ser. No. 765,151, Oct. 4, 1968, Pat. No. 3,565,777. This application Sept. 25, 1970, Ser. No. 75,741
Int. Cl. B01j *1/10*
U.S. Cl. 204—193 5 Claims

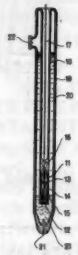


A method and apparatus for removing sulfur dioxide from stack gases wherein the stack gas is first subjected to electrically charged water droplets and subsequently to ultraviolet light.

3,676,319
ELECTRODE, HALF CELL AND ELECTRODE COMPONENT FOR THE MEASUREMENT OF ELECTROMOTIVE FORCE

Jurgen Manfred Kirsten, Horsholm, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark

Filed March 28, 1969, Ser. No. 811,328
Int. Cl. B01k 3/00
U.S. Cl. 204—195 F 25 Claims

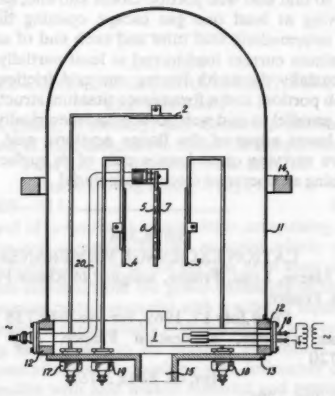


An electrode, half cell and electrode component for the measurement of electromotive force, wherein during application a conductor surface of a solid metal contacts ions of a sparingly soluble salt of the same metal and ions of a readily soluble salt, the anion of which is identical with the anion of the sparingly soluble salt. By providing sufficient amounts of a solid phase of both kinds of salts, such that the solid phase of both salts is still present in the electrode component or half cell at the maximum operating temperature, the solution contacting the conductor surface is saturated with respect to both types of salts at any operating temperature, whereby temperature hysteresis is avoided.

3,676,320
METHOD FOR DEPOSITING THIN FILMS ON THIN ELONGATED ELECTRICALLY INSULATING SUBSTRATES

Orla Christensen, Copenhagen, Denmark, assignor to Disa Elektronik A/S (Dansk Industri Syndikat A/S), Herlev, Denmark

Filed March 13, 1970, Ser. No. 19,352
Claims priority, application Denmark, March 17, 1969, 1443
Int. Cl. C23c 15/00
U.S. Cl. 204—192 1 Claim

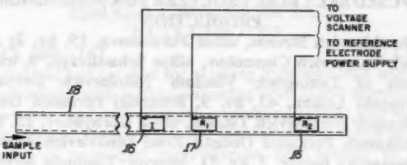


A method for depositing thin films on thin elongated, electrically insulating substrates by bias-sputtering material from two targets on to the substrates in an electrical plasma, the substrates being suspended over apertures in an electrically biased metallic substrate holder, around which is formed a dark space filling said apertures and surrounding the substrates. A thin film deposited by said method has good film adhesion, good all-over uniformity and electrical properties close to the bulk valus of the film material so as to be applicable as sensing element in sensors.

3,676,321
ELECTROCHEMICAL OXYGEN DEMAND SYSTEM

John P. Cummings, Minneapolis, and Richard E. Berg, Chanhassen, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 27, 1970, Ser. No. 58,254
Int. Cl. G01n 27/46
U.S. Cl. 204—195 R 15 Claims



A method and system for the determination of organic and inorganic waste products present in aqueous samples, the arrangement including cell means for receiving a flow of an aqueous sample therethrough with means for delivering a predetermined quantity of a water soluble electrolyte into said sample prior to passing through said cell. Heating means are provided for maintaining the sample at a predetermined temperature level as it passes through said cell. The cell includes a plurality of space electrodes including a reference electrode, an indicating electrode, and a common electrode in circuit with said reference and indicating electrodes. A first circuit is coupled to the reference and common electrodes and a unipolar electrical signal is impressed thereacross, the magnitude being sufficient for aqueous electrolysis, A second circuit means is coupled to said indicating and common electrodes and delivers a scanning signal of a programmed potential magnitude with periodic increases and decreases in respect to time, the peak magnitude of said scanning signal being less than that required for aqueous electrolysis. Readout means are arranged in series with said indicating and common electrodes for determining the current flow through said second circuit means in response to the scanning signal. The system is also useful for the determination of carbon monoxide in gaseous atmospheres.

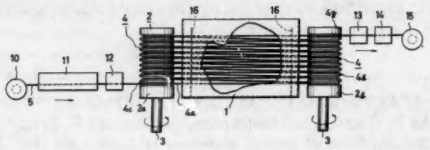
3,676,322
APPARATUS AND METHOD FOR CONTINUOUS PRODUCTION OF ELECTROLYTICALLY TREATED WIRES

Yoshihiro Kamata, and Takashi Hirose, Nikko-shi, both of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Jan. 6, 1970, Ser. No. 891
Int. Cl. C23b 3/06, 5/58, 5/68
U.S. Cl. 204—206 5 Claims

Apparatus and method for continuously producing electrolytically treated wires which comprise immersing a wire repeatedly in an electrolyte contained in an electrolytical treatment tank positioned between guide rolls which passing the wire continuously back and forth between the guide rolls by

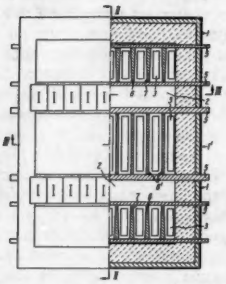
guiding the wire stepwise on the guide rolls, using the wire as an electrode and providing another electrode within the electrolytic treatment tank to effect electrolytic plating and/or polishing at a high production efficiency.



3,676,323
FUSED SALT ELECTROLYZER FOR MAGNESIUM PRODUCTION

Khaim Lipovich Strelets, ulitsa Furmanova, 19, kv. 2; Alexandr Sergeevich Chesnokov, ulitsa Schastlivaya, 9, kv. 28, both of Leningrad; Vladimir Nikolaevich Devyatkin, prospekt Lenina, 43, kv. 9, Berezniki Permskoi Oblasti; Alexandr Nikolaevich Tatakin, ulitsa Gornyakov, 13, kv. 3, Solikamsk Permskoi Oblasti; Evsei Dmitrievich Krasikov, Slavyansky bulvar, 3, kv. 51, Moscow; Ljudmila Sergeevna Leonova, ulitsa Lomonosova, 105, kv. 151; Galina Arkadievna Medvetskaya, ulitsa Lva Tolstogo, 68, kv. 53, both of Berezniki Permskoi Oblasti, and Tatyana Georgievna Nechaeva, ulitsa Mira, 42, kv. 73, Solikamsk Permskoi Oblasti, all of U.S.S.R.

Filed Dec. 10, 1970, Ser. No. 96,835
Int. Cl. C22d *3/02, 3/08*
U.S. Cl. 204—244 4 Claims



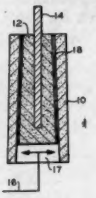
An electrolyzer for the manufacture of magnesium, which has at least one electrolysis compartment with a cathode in the form of a frame whose members make up a closed loop around an anode in the electrolysis compartment.

3,676,324
COMPOSITE CARBON ELECTRODE STRUCTURE HAVING IMPROVED ELECTRICAL CONDUCTIVITY

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 7, 1969, Ser. No. 874,808
Int. Cl. B01r *3/04;* C23b *5/74;* B01r *3/08*
U.S. Cl. 204—284 14 Claims

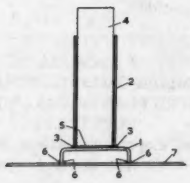
A carbon electrode structure having improved electrical conductivity is provided. Said carbon electrode structure comprises a first section of carbon, a second section of carbon secured to said first section of carbon, and a layer of finely divided conductive carbon disposed between said first and second sections of carbon.



3,676,325
ANODE ASSEMBLY FOR ELECTROLYTIC CELLS

Frank Smith, and John Hubert Entwisle, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 8, 1970, Ser. No. 44,044
Claims priority, application Great Britain, June 27, 1969, 32,544/69
Int. Cl. B01k *3/04;* C23g *5/68;* B01r *3/04*
U.S. Cl. 204—288 14 Claims



An anode assembly for electrolytic cells comprising: a downwardly-facing, open-ended, horizontally-elongated titanium channel member having a web portion and two depending flange portions integral with the web portion; a titanium tube secured at one end to said web portion in a fluid-tight manner so that said web portion closes said end, said web portion having at least one gas escape opening therethrough located intermediate said tube and each end of said channel an aluminum current lead-in rod at least partially within the tube coaxially therewith having one end friction-welded to said web portion; and a foraminate titanium structure lying in a plane parallel to said web portion and electrically connected to the lower edges of the flange portions, said foraminate structure carrying on at least a part of its surface a coating comprising an operative electrode material.

3,676,326
CATION EXCHANGE MEMBRANES

Xavier Marze, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed July 17, 1969, Ser. No. 842,718
Claims priority, application France, July 18, 1968, 68159720
Int. Cl. B01k *3/10*
U.S. Cl. 204—296 5 Claims

The invention provides cation exchange membranes made from sulphated ethylene-vinyl alcohol copolymers and a process for the preparation thereof.

3,676,327

INHIBITION OF CORROSION BY HYDROTREATER EFFLUENT

Zisis Andrew Foroulis, East Orange, N.J., assignor to Esso Research and Engineering Company

Filed Feb. 19, 1970, Ser. No. 12,840
Int. Cl. C23f *11/04*; C10g *9/10*
U.S. Cl. 208—47 6 Claims

Corrosion of metals by aqueous hydrochloric acid condensates in petroleum processing equipment is markedly inhibited by the addition of a lower aliphatic amine to the system. The operative amines are primary aliphatic amines having four to 10 carbon atoms. Octylamine is a preferred inhibitor.

3,676,328

REFORMING WITH FIVE PLATINUM RHENIUM CATALYST BEDS

Milton H. Dalson, c/o Engelhard Minerals & Chemicals Corp. 497 Delancy St., Newark, N.J.; James P. Gallagher, c/o Atlantic Richfield Co. 400 E. Sibley Blvd., Harvey, Ill., and William C. Pfefferle, c/o Engelhard Minerals & Chemicals Corp. 497 Delancy St., Newark, N.J.

Filed June 12, 1970, Ser. No. 45,937
Claims priority, application Canada, June 20, 1969, 054,905
Int. Cl. C10g *35/08*
U.S. Cl. 208—65 3 Claims

Naphtha containing from 40 to 60 percent naphthenes, 5 to 25 percent aromatics, 25 to 55 percent paraffins is reformed in a system including five serially arranged reactors having catalyst containing platinum and rhenium supported on a porous, solid base such as alumina. A defined manner of operation regarding reactor inlet temperatures and space velocities is disclosed.

3,676,329

REFORMING WITH FOUR OR FIVE PLATINUM RHENIUM CATALYST BEDS

Milton H. Dalson, and William C. Pfefferle, both of c/o Engelhard Minerals & Chemicals Corp., 497 Delancy St., Newark, N.J.

Filed June 12, 1970, Ser. No. 45,896
Claims priority, application Canada, June 20, 1969, 054,900
Int. Cl. C10g *35/08*
U.S. Cl. 208—65 3 Claims

Naphtha containing 15 to 30 percent naphthenes and 5 to 20 percent aromatics is reformed in a system including four or five serially-arranged reactors in which the catalyst contains platinum and rhenium supported on a porous, solid base such as alumina. Reactor inlet temperatures and space velocities are defined.

3,676,330

ZEOLITE-CONTAINING CATALYST, SYNTHESIS AND USE THEREOF

Charles J. Plank, Woodbury, and Edward J. Rosinski, Deptford, both of N.J., assignors to Mobil Oil Corporation

Filed Dec. 15, 1969, Ser. No. 885,288
Int. Cl. C10g *13/02*; B01j *11/40*
U.S. Cl. 208—111 44 Claims

A method of preparing a composition comprising a crystalline zeolite and a porous matrix material which comprises coating at least a portion of the surface of at least one of the components selected from the group consisting of said zeolite and said porous matrix material with a solid or liquid coating material which is substantially retained during any subsequent processing steps prior to its positive intentional removal, which occurs after the compositing step, intimately compositing said zeolite with said matrix material and removing said coating material; the composition prepared therefrom and hydrocarbon conversion employing the composition as a catalyst.

3,676,331

UPGRADING OF CRUDE OILS

Armin C. Pitchford, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 19, 1970, Ser. No. 47,598
Int. Cl. C10g *13/02*
U.S. Cl. 208—112 9 Claims

A method and catalyst for the upgrading of hydrocarbons which employs a multiple component catalyst system to generate hydrogen in situ and to thereby produce, within the hydrocarbons, materials of low molecular weight, and of reduced carbon residue and sulfur content.

3,676,332

HYDROGENATION WITH A MOLYBDENUM ARSENIC CATALYST

Marvin M. Johnson, and Donald C. Tabler, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed April 2, 1970, Ser. No. 25,239
Int. Cl. C10g *23/02*
U.S. Cl. 208—143 7 Claims

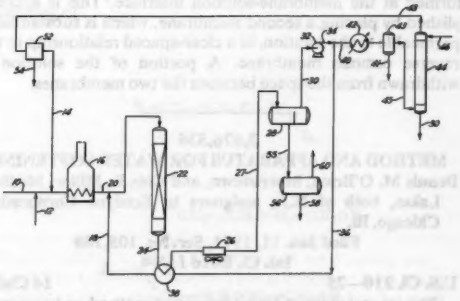
A method and catalyst for reacting hydrogen with aromatic hydrocarbons, with sulfur-containing acyclic and heterocyclic compounds, and with nitrogen-containing acyclic and heterocyclic organic compounds, the catalyst being comprised essentially of supported molybdenum and arsenic in their reduced forms.

3,676,333

HYDRODESULFURIZATION UTILIZING MULTIPLE HYDROGEN RECYCLE STREAMS

Edgar Carlson, Allison Park, Pa., and William R. Lehrian, Tokyo, Japan, assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed March 26, 1970, Ser. No. 25,115
Int. Cl. C10g *23/00*
U.S. Cl. 208—209 7 Claims



A portion of the effluent gas from a hydro-desulfurization process is treated for removal of hydrogen sulfide and admixed with the hydrocarbon fraction before entry into the feed heater. Untreated effluent gas containing hydrogen and hydrogen sulfide is then admixed with the preheated hydrocarbon-hydrogen gas mixture prior to entry into the reactor. Treating only that portion of the effluent gas which passes through the heater minimizes coking and corrosion problems in the heater but it also reduces the effort previously required for treating all the recycle gas.

3,676,334
WASTEWATER TREATMENT SEQUENCE

Mathew M. Zuckerman, Yonkers, and Alan H. Molof, New City, both of N.Y., assignors to Envirotech Corporation, Palo Alto, Calif.

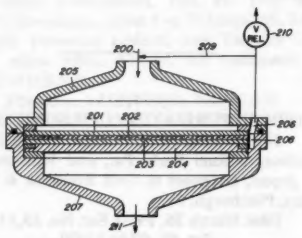
Continuation-in-part of Ser. No. 768,378, Oct. 17, 1968. This application May 14, 1969, Ser. No. 824,709
Int. Cl. C02c 5/02
U.S. Cl. 210—9 20 Claims

An improved process for treating wastewater is based on a pre-treatment to convert high molecular weight soluble organic material in raw wastewater into organic material of low molecular weight. Following this conversion, the wastewater is treated with a process sequence tailored to effluent quality requirements. One such sequence may include, for example, the steps of physical or biological adsorption, solids removal, membrane filtration, and disinfection.

3,676,335
PROCESS FOR EFFECTING CHANGES IN SOLUTION CONCENTRATIONS

Robert E. Lacey, Homewood, Ala., and Milton S. Mintz, McLean, Va., assignors to Southern Research Institute and The United States of America as represented by the Secretary of Interior, part interest to each

Division of Ser. No. 645,571, June 8, 1967, Pat. No. 3,577,331. This application Dec. 9, 1970, Ser. No. 96,406
Int. Cl. B01d 13/00
U.S. Cl. 210—23 6 Claims



Efficiency of reverse osmosis separation processes is enhanced by reducing the thickness of the boundary layer formed at the membrane-solution interface. This is accomplished by placing a second membrane, which is substantially permeable to the solution, in a close-spaced relationship to the reverse osmosis membrane. A portion of the solution is withdrawn from the space between the two membranes.

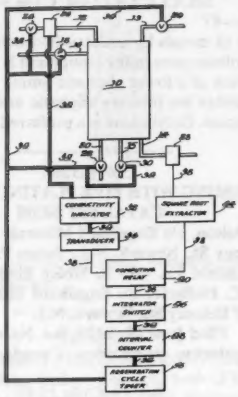
3,676,336
METHOD AND APPARATUS FOR WATER SOFTENING

Dennis M. O'Brien, Morristown, and Cole R. Miller, Medford Lakes, both of N.J., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,188
Int. Cl. B01d 15/04
U.S. Cl. 210—25 14 Claims

The invention provides an improved method and apparatus for controlling the provision of regenerated resin to an ion-exchange column. In carrying out the method, the conductivity of the raw water flowing to the column and the flow of water delivered to the column are measured. The conductivity is then multiplied by the flow, and the product of the conductivity and flow is totalized. The column is provided with regenerated resin when the total of this product reaches a predetermined amount.

The apparatus comprises an improvement in a conventional ion-exchange system having a service column containing ion-exchange resin and raw water delivery means for delivering raw water to the service column. Generally, the invention comprises an improved control system having conductivity means for measuring the conductivity of the water in the raw water delivery means and flow measuring means for measuring the flow of water through the service column. Multiplier means are provided for multiplying the conductivity by the

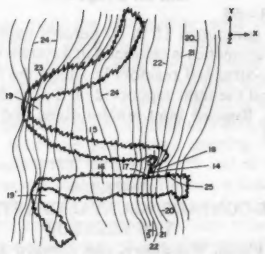


flow, and totalizer means totalize the product of these functions. Means are provided for automatically providing the service column with regenerated resin responsive to a signal from the totalizer means indicating that the total of the product has reached a pre-determined amount.

3,676,337
PROCESS FOR MAGNETIC SEPARATION

Henry H. Kolm, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 761,048, Sept. 20, 1968, Pat. No. 3,567,026. This application July 9, 1970, Ser. No. 53,497
Int. Cl. C02b 1/00
U.S. Cl. 210—42 6 Claims



Process for separating colloidal and sub-colloidal ceramic magnetic components and paramagnetic components from a slurry (or other carrier) by passing the slurry through a column containing a magnetic material, as a magnetic grade stainless steel wool. The steel wool is subjected to a d-c magnetic field sufficient in magnitude to effect magnetization to saturation and above and provides a large number of regions of very high magnetic field and magnetic field gradient along the paths of travel of the slurry to attract and retain the magnetic components. It has been found that in order to provide removal of such components on an industrial scale at the high throughput rates required, a background field in the wool of at least about 12,000 gauss is required to overcome the forces of turbulence or the like in the slurry.

3,676,338
DETERGENT COMPOSITIONS CONTAINING A TEXTILE SOFTENER

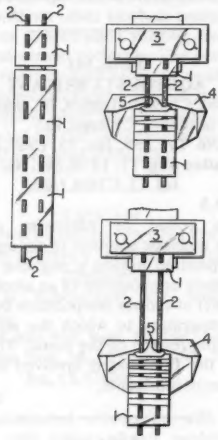
Walter Fries, Erkrath-Unterbach; Markus Berg, Dusseldorf-Holthausen; Manfred Dohr, Dusseldorf-Holthausen, and Alfred Kirstahler, Dusseldorf, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Continuation-in-part of Ser. No. 745,952, July 18, 1968, abandoned. This application Jan. 14, 1970, Ser. No. 2,722

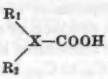
Claims priority, application Germany, Jan. 16, 1969, P 19 01 936.4; July 19, 1967, H 63320; April 5, 1968, P 17 67 142.0

Int. Cl. C11d *1/04, 1/83;* **D06m** *13/20*

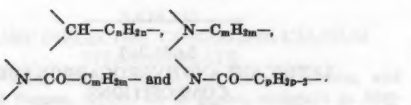
U.S. Cl. 252—8.75 **18 Claims**



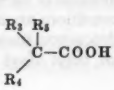
This invention relates to a combination of surface-active compounds utilizable in neutral to alkaline textile washing baths which comprises (a) from 20 to 90 percent by weight of customary surface-active compounds utilizable in neutral to alkaline textile washing baths selected from the group consisting of anionic surface-active compounds, amphoteric surface-active compounds, non-ionic surface-active compounds and mixtures thereof and (b) from 80 to 10% by weight of a textile softener selected from the group consisting of (1) compounds of the formula



wherein R_1 and R_2 are alkyl having from six to 18 carbon atoms and X is a trivalent link selected from the group consisting of



where *n* represents an integer from 0 to 2, *m* represents an integer from 1 to 2 and *p* represents an integer from 2 to 3, compounds of the formula



wherein R_3 and R_4 are members selected from the group consisting of alkyl having from one to 23 carbon atoms and cycloalkylalkyl having from seven to 23 carbon atoms and R_5 is a member selected from the group consisting of hydrogen, alkyl having from one to 23 carbon atoms and cycloalkylalkyl having from seven to 23 carbon atoms, with the proviso that the total number of carbon atoms in R_1, R_2 and R_3 is from six to 24 carbon atoms and (2) water soluble salts thereof. Textile washing agents and textile auxiliary washing agents containing the above combinations of surface-active compounds, with or without a content of enzymes are also part of the invention.

3,676,339
SUBSTITUTED BIS-TRIAZINYLAMINO STILBENE COMPOUNDS AND COMPOSITIONS THEREOF

Christopher Johannes Tscharner, Warwick, R.I., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

Division of Ser. No. 561,330, June 29, 1966, Pat. No. 3,546,218. This application April 16, 1970, Ser. No. 33,118

Int. Cl. D06m *13/46;* **C11d** *3/42*

U.S. Cl. 252—8.75 **5 Claims**

Described herein are certain bis-triazinylamino stilbene type optical brighteners and their use in treating textiles and paper. The brighteners are particularly useful in conjunction with fabric softeners and in laundry detergents.

3,676,340
COMBINATIONS OF DETERGENTS WITH CONTROLLED FOAMING PROPERTIES AND WASHING AGENTS CONTAINING THEM

Markus Berg, Dusseldorf-Holthausen; Walter Fries, Erkrath, Unterbach, Rhineland, and Alfred Kirstahler, Dusseldorf, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

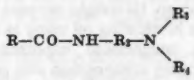
Filed July 18, 1968, Ser. No. 752,097

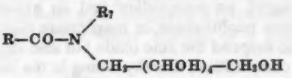
Claims priority, application Germany, July 19, 1967, H 63320; April 27, 1968, P 17 67 334.6

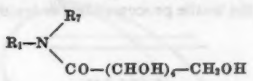
Int. Cl. C11d *1/84, 3/28, 9/24*

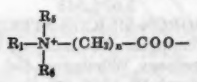
U.S. Cl. 252—8.75 **14 Claims**

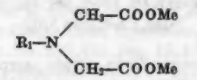
This invention relates to a combination of anionic and/or non-ionic surface-active compounds together with a foam stabilizer and a foam inhibitor active at temperatures above 60° C, said combination having controlled foaming properties, containing therein as foam stabilizer active at temperatures up to 60° C, a compound of the formula selected from the group consisting of

I 

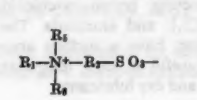
II 

III 

IV 

V 

and

VI 

wherein R—CO represents the acyl of a fatty acid with 10 to 18 carbon atoms, R_1 represents an aliphatic hydrocarbon radical with 10 to 18 carbon atoms, R_2 represents an alkylene group with two to five carbon atoms, R_3 and R_4 represent members selected from the group consisting of hydroxyethyl, hydroxypropyl and dihydroxypropyl, R_5 and R_6 represent members selected from the group consisting of methyl, ethyl, hydroxyethyl, hydroxypropyl and dihydroxypropyl, R_7 represents members selected from the group consisting of hydrogen, methyl, ethyl, hydroxyethyl, hydroxypropyl and dihydroxypropyl, *n* is an integer from 1 to 2 and Me represents a member selected from the group consisting of hydrogen and alkali metal. The invention also relates to washing agents having controlled foaming properties containing the above combination of surface-active compounds.

3,676,341

TEXTILE SOFTENING COMPOSITIONS

John Fred Gerecht, Somerville, and Harold Eugene Wixon, New Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 733,316, May 31, 1968, abandoned. This application March 15, 1971, Ser. No. 124,515
Int. Cl. C11d *3/04, 1/38*
U.S. Cl. 252—8.8 6 Claims

A method and composition for simultaneously cleansing and softening textiles without yellowing by utilizing a detergent composition containing effective amounts of an alkylated polyethyleneimine polymer, the ratio of detergent to polymer ranging from 20:1 to 1:5 and preferably 10:1 to 1:2.

3,676,342

LUBRICANT FOR TEXTILE MACHINERY

Albert Gathman, Belmar, and George W. Gleim, Springfield, both of N.J., assignors to Esso Research and Engineering Company

Filed Dec. 1, 1969, Ser. No. 881,331
Int. Cl. C10m *1/24, 1/10*
U.S. Cl. 252—18 3 Claims

A lubricating composition that is uniquely designed for the lubrication of textile machinery such as a circular knitting machine comprises a lubricating oil containing zinc oxide as an antiwear agent. The zinc oxide is incorporated in the lubricating oil composition by first preparing an additive concentrate wherein up to 10 weight percent of zinc oxide has been dispersed in a lubricating oil using as a dispersing agent zinc naphthenate, magnesium naphthenate or mixtures thereof. The lubricating composition also preferably contains an oiliness agent, an antioxidant and an extreme pressure agent. The zinc naphthenate or magnesium naphthenate not only serves to suspend the zinc oxide but also imparts scourability to the composition, thereby aiding in the removal of the lubricant from the textile processed by the textile machinery.

3,676,343

AMORPHOUS BORON-SILICON-NITRIDE MATERIALS

John W. Dietz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 10, 1969, Ser. No. 805,837
Int. Cl. C10m *5/02*
U.S. Cl. 252—25 7 Claims

Amorphous boron-silicon-nitride ternary nitrides are prepared by reacting boron trichloride [BCl_3], silicon tetrachloride [$SiCl_4$], and ammonia. The products are resistant to oxidation; have a surface area greater than 100 m^2/gm; and are useful at high temperatures as insulation, catalyst supports, and dry lubricants.

3,676,344

ETHER AMIDES IN AQUEOUS LUBRICANTS

Vincent P. Kuceski, Chicago Heights, Ill., assignor to The C. P. Hall Company of Illinois/Chicago, Illinois

Continuation-in-part of Ser. No. 791,259, Jan. 15, 1969, abandoned. This application Sept. 2, 1970, Ser. No. 69,071
Int. Cl. C10m *1/36*
U.S. Cl. 252—49.3 5 Claims

Metals, when rolled or otherwise compressed, are lubricated by an aqueous solution of an organic, polar, surface-acting composition having a negative heat of solution which is an ether amide which is soluble in the water at a lower temperature but insoluble in the water at the temperature to which the aqueous solution is heated during compression of the metal. This aqueous lubricant eliminates the fire hazard involved in the use of the present non-aqueous lubricants.

3,676,345

AQUEOUS LUBRICANT

Vincent P. Kuceski, Chicago Heights, Ill., assignor to The C. P. Hall Company of Illinois, Chicago, Ill.

Division of Ser. No. 791,259, Jan. 15, 1969, abandoned. This application Aug. 17, 1970, Ser. No. 64,454
Int. Cl. C10m *1/46*
U.S. Cl. 252—49.3 5 Claims

Metals, when rolled or otherwise compressed, are lubricated by an aqueous solution of an organic, polar, surface-acting composition having a negative heat of solution which is a phosphate or phosphite of an alcohol ether which is soluble in the water at a lower temperature but insoluble in the water at the temperature to which the aqueous solution is heated during compression of the metal. This aqueous lubricant eliminates the fire hazard involved in the use of the present non-aqueous lubricants.

3,676,346

LUBRICATING OIL COMPOSITIONS CONTAINING IMPROVED SLUDGE INHIBITING ADDITIVES

Shih-En Hu, Westfield, N.J., assignor to Esso Research and Engineering Company

Filed Feb. 19, 1970, Ser. No. 12,869
Int. Cl. C10m *1/38*
U.S. Cl. 252—47.5 7 Claims

Mineral lubricating oil compositions are prepared containing sludge dispersing amounts of conventional ashless dispersants and, optionally, their sulfurized derivatives, and also containing sludge inhibiting or oxidation inhibiting amounts of sulfurized oil-soluble pour point depressant type organic compounds. The ashless dispersants used are the polyalkylene polyamine condensation products of alkenyl succinic acids or anhydrides or of alkenyl substituted lower fatty acids wherein the alkenyl radical is of C_{40} to C_{250} length used either alone or along with their sulfurized derivatives. The pour point depressants are those heretofore conventionally used but in their sulfurized form, such as sulfurized wave alkylated naphthalene, sulfurized polymeric long chain alkyl esters of acrylic or methacrylic acids.

3,676,347

LUBRICANT AND HYDROCARBON FUEL COMPOSITIONS

Gerassimos Frangatos, Westmont, N.J., assignor to Mobil Oil Corporation

Filed June 19, 1970, Ser. No. 47,900
Int. Cl. C10m *1/28, 1/32*
U.S. Cl. 252—51.5 R 15 Claims

The stability and cleanliness of lubricating oils under severe thermal and oxidative conditions are improved and the electrical conductivity of hydrocarbon fuels is increased by adding thereto a copolymer of cetyl vinyl ether and N-vinyl-pyrrolidone.

3,676,348

LUBRICANT COMPOSITIONS

Alvin J. Unick, Baton Rouge, La., and Kenneth W. Gault, Newnan, Ga., assignors to Ethyl Corporation, New York, N.Y.

Filed May 27, 1969, Ser. No. 828,384
Int. Cl. C10m *1/30, 1/22*
U.S. Cl. 252—54 10 Claims

Disclosed are improved lubricants particularly useful for forming metallic articles into desired sizes and shapes based upon operations enhanceable by lubricants. Typical specific working operations are cutting, sawing, grinding, shaping, planing, stamping, drawing, sanding, filing, milling, shearing, machining, and drilling. Preferred lubricant compositions are alkanol mixtures of predominantly normal alcohol and branched primary alcohol structures having predominantly from about 20 to about 34 carbon atoms per molecule, with or most preferably, without other alcohols containing secondary hydroxyl groups or unsaturation ranging from about 14 to about 50 carbon atoms per molecule. The preferred lubricant compositions are characterized by useful residual or film properties for protection of surfaces, particularly those freshly exposed through working when using the lubricants. Such properties are enhanced by the combination of polar and nonpolar aspects of the preferred molecules.

3,676,349

LUBRICATING COMPOSITIONS CONTAINING HALOGEN AND ALKOXY, ACYLOXY, OR HYDROXY GROUPS

Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company

Division of Ser. No. 666,965, Sept. 11, 1967, abandoned. This application Sept. 25, 1970, Ser. No. 75,666
Int. Cl. C10m *1/30*
U.S. Cl. 252—54.6 7 Claims

Compositions substituted with iodine, with either bromine or chlorine, and with either alkoxy, acyloxy, or hydroxy groups are prepared by adding a mixture of iodine and either bromine or chlorine or IBr or ICl to alpha-olefins in the presence of alcohols, carboxylic acids, or water. Lubricating compositions useful for lubricating high temperature alloys are prepared by adding such compounds to oils of lubricating viscosity.

3,676,350

GLOW DISCHARGE POLYMERIZATION COATING OF TONERS FOR ELECTROPHOTOGRAPHY

John F. Wright, and James R. Olson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,424
Int. Cl. G03g *9/00*
U.S. Cl. 252—62.1 8 Claims

The triboelectric properties and minimum caking temperature of particulate toner material can be altered by glow discharge treatment in the presence of an inert gas, air or a gaseous polymerizable material.

3,676,351

CERAMIC DIELECTRIC COMPRISING CALCIUM TITANOSILICATE

Hiromitsu Taki; Shigeru Hayakawa, both of Osaka, and Kaneomi Nagase, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Continuation-in-part of Ser. No. 682,506, Nov. 13, 1967, abandoned. This application Aug. 6, 1970, Ser. No. 61,745
Claims priority, application Japan, March 27, 1967, 42/19747
Int. Cl. H01b *3/02*
U.S. Cl. 252—63.5 3 Claims

Dielectric ceramics having a high dielectric constant, an extremely low dissipation factor, and a controlled temperature coefficient of dielectric constant between +800 and −1,000ppm/° C consists, according to this invention, of three phases composed essentially of,

	Mol percent
calciumtitanosilicate	10 ~ 99.5
strontium titanate	0.5 ~ 30
titanium dioxide	remainder.

3,676,352

PROCESS FOR THE MANUFACTURE OF ENZYME AND PERBORATE-CONTAINING DETERGENT COMPOSITIONS

Dieter Grimm, Hermulheim near Cologne; Joachim Kandler, Lechenich; Karl Merkenich, Efferen near Cologne, and Wolf-Dieter Pirig, Euskirchen, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Jan. 26, 1970, Ser. No. 5,945
Claims priority, application Germany, Feb. 11, 1969, P 19 06 705.1; Jan. 2, 1970, P 20 08 069.5
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 8 Claims

Production of enzyme and perborate-containing detergent compositions by spraying liquid or pasty detergent components onto solid, powdery detergent components with the resultant formation of a readily flowable granulate. Solid detergent components comprising a powder mixture consisting substantially of one or more alkali metal salts as a builder substance and sodium perborate are fluidized by means of air and the fluidized powder mixture is granulated by spraying liquid detergent components comprising water or an aqueous solution or suspension of one or more binders and optionally a surface-active substance, onto it. The enzyme may be present in the powder mixture or in the water or aqueous solution or suspension to be sprayed thereonto.

3,676,353

NONFLOURIDE LAUNDRY SOUR CONTAINING FUMARIC ACID

John D. Ciko, Detroit, Mich., assignor to Basf Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 16, 1971, Ser. No. 115,885
Int. Cl. C11d *7/08, 7/26;* D06l *1/16*
U.S. Cl. 252—136 5 Claims

The laundering of fabrics is improved by the use of fumaric acid as a laundry sour. Very satisfactory results are obtained by the use of a laundry sour containing a predominant amount of fumaric acid and a minor amount of a glassy sodium metaphosphate.

3,676,354

CORROSION INHIBITOR FOR HYDROCHLORIC ACID PICKLING OF STEEL

Thomas M. Kaneko, Trenton; Irving R. Schmolka, and John W. Compton, both of Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 697,631, Jan. 15, 1968, Pat. No. 3,607,781. This application Oct. 2, 1970, Ser. No. 77,710
Int. Cl. C23f *11/04, 11/12*
U.S. Cl. 252—147 8 Claims

A corrosion inhibitor composition for addition to aqueous solutions normally corrosive to metal surfaces is prepared by

dissolving a surface active agent and an amine in a mixture of mineral acids.

3,676,355

STABILIZATION OF 1,1,1,TRICHLOROETHANE WITH OXAZOLE

Jacques Vuillemenot, Uriage-les-Bains, France, assignor to Ugine Kuhlmann, Paris, France

Filed Dec. 19, 1968, Ser. No. 785,372

Claims priority, application France, Dec. 22, 1967, 67133564

Int. Cl. C07d *17/40;* C11d *7/50;* C23g *5/02*

U.S. Cl. 252—153 5 Claims

1,1,1, trichlorethane, an industrial solvent, is stabilized to prevent its reaction with metals by the addition thereto of from about 0.2 percent to 10 percent of a stabilizing agent comprising oxazole either alone or in combination with one or more other stabilizers having a boiling point in the range from 40° C. to 200° C. and having a molecular structure which comprises at least one of the molecular groups consisting of ethylenic bond, acetylenic bond, acetal, ketone, alcohol, nitrile, amine, ester function, ether or tioether bond-bridge, nitrated group and 1,2-epoxy group.

3,676,356

COMPOSITION FOR THE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS STREAMS

Melvin L. Roberts, Woodridge, Ill.; Carl E. Johnson, Brookhaven, Miss., and Richard C. Miller, Chicago, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of Ser. No. 9,430, Feb. 6, 1970, Pat. No. 3,622,273. This application March 22, 1971, Ser. No. 127,015

Int. Cl. C01b *17/04;* B01d *53/34*

U.S. Cl. 252—192 9 Claims

A method for removing hydrogen sulfide from gaseous streams by contacting the gaseous stream with an absorbing solution of from 0.005 to 20 percent of a ferric ion complex, from 25.0 to 99.945 percent water, from 0.05 to 10.0 percent of a buffering agent, and from 0 to 74.945 percent of a water-soluble, organic solvent selected from the group consisting of dimethyl formamide and dimethyl sulfoxide.

3,676,357

COMPOSITIONS USEFUL FOR ELIMINATING WATER SURFACE POLLUTION CAUSED BY ORGANIC SUBSTANCES

Brunello Cluti, San Donato Milanese, and Sergio Del Ross, La Spezia, both of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed March 6, 1970, Ser. No. 17,334

Claims priority, application Italy, March 6, 1969, 13723 A/69

Int. Cl. B01d *15/00;* C09k *3/00*

U.S. Cl. 252—259.5 2 Claims

Composition useful in eliminating surface water pollution caused by crude petroleum oil or its fractions consisting of:

1. a carrier having a specific gravity sufficiently low that it floats (e.g. sawdust, silicates, diatomite, vegetable oil residues, vegetable flour, animal flour, silica gel, charcoal, polyurethane resin and polyvinyl chloride);
2. a surface active agent, viz., sodium stearate, sodium alkyl-sulfonate, potassium stearate, sodium dodecyl-benzene-sulfonate, potassium palmitate, nonylphenol ethylene oxide (1:7) or triethanolamine oleate; and
3. a wetting agent, viz., isoamyl alcohol, glycerol, ethylene glycol, butylic alcohol or amyl alcohol.

3,676,358

ATOMIZING, SPRAY-DRYING AND FLAME PROCESS FOR MANUFACTURING PHOSPHORS

Ernest A. Dale, Hamilton, and Martha J. B. Thomas, Winchester, both of Mass., assignors to Sylvania Electric Products Inc.

Filed Jan. 2, 1970, Ser. No. 422

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P 10 Claims

Phosphor raw ingredients are homogeneously dispersed or dissolved in a liquid which is then spray dried to form particles having a predetermined particle size range, each particle containing substantially identical proportions of the raw materials. The particles are then passed through a flame in order to react the particles to form phosphor matrices.

3,676,359

CHEMICAL SEA SURFACE MARKER

William D. Garrett, Washington, D.C., and William R. Barger, Jr., Landover, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 14, 1970, Ser. No. 80,763

Int. Cl. C09k *1/02, 3/00*

U.S. Cl. 252—301.3 R 2 Claims

Surface-active monomolecular films are used in conjunction with fluorescent dyes to provide sea surface markers having greater visibility at all angles for longer periods of time than prior art dye markers.

3,676,360

LIQUID SCINTILLATORS

Adil E. Shamoo, 32-32 32nd St., Astoria, N.Y.

Continuation-in-part of Ser. No. 874,979, Nov. 7, 1969, abandoned. This application June 30, 1971, Ser. No. 158,554

Int. Cl. G01t *1/20;* C09k *1/02*

U.S. Cl. 252—301.2 R 12 Claims

The counting efficiency of liquid scintillators containing toluene as the solvent for a primary solute or activator and for a secondary solute or spectrum shifter is improved, particularly in the presence of water, for example, when the isotope to be detected is an aqueous solution, by adding to the liquid scintillator a hygroscopic substance which is soluble in toluene in an amount sufficient to absorb and/or emulsify the water that is present. Such hygroscopic additive is preferably cellulosic and may be selected from the group consisting of cellulose, carboxymethyl cellulose, cellulose phosphate, diethylaminoethyl cellulose, benzyl diethylaminoethyl cellulose and epichlorohydrin triethanolamine cellulose. The additive for improving the counting efficiency may advantageously include, apart from the cellulose and/or cellulose derivative, a small amount of sodium or calcium carbonate or bicarbonate. The improvement in counting efficiency resulting from the mentioned addition is particularly large when the scintillators liquid includes alcohol as well as toluene.

3,676,361

TERNARY ALKALINE-EARTH PYROSILICATE LUMINESCENT MATERIALS ACTIVATED WITH DIVALENT EUROPIUM

Ranajit Kumar Datta, East Cleveland, Ohio, assignor to General Electric Company

Filed April 15, 1969, Ser. No. 816,273

Int. Cl. C09k *1/54*

U.S. Cl. 252—301.4 F 4 Claims

Several ternary pyrosilicate compositions of the system $MO\text{-}MgO\text{-}SiO_2$ (M = Sr, Ba, Ca) of the general formula M_2MgSi_2B7 were activated with divalent europium while maintaining the charge balance. Under cathode-ray, and long-

and short-wavelength ultraviolet excitation, they show green and/or blue emission depending on the matrix involved. In the phosphors not containing barium, equivalent amounts of magnesium and silicon can be replaced by aluminum and the charge balance maintained. Some embodiments, especially those with high barium content, show good temperature-dependence characteristics, and this phosphor system is useful in fluorescent and high pressure mercury vapor lamps.

3,676,362

METHOD FOR MAKING METAL OXIDE SOLS IN POLAR ORGANIC SOLVENTS

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1970, Ser. No. 93,846
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 7 Claims

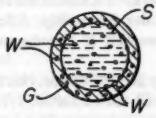
Sols of Sb_2O_3, SnO_2, TiO_2 and ZrO_2 in organic polar liquids are prepared by reacting a soluble salt of the metal with water and ammonia in a solution of the liquid. The reaction produces the metal oxide in colloidal dispersion and an insoluble ammonium salt, which precipitates and is filtered off. Sols in liquids which are solvents for organic polymers are used to incorporate metal oxides into the polymers to provide flame resistance and other desirable properties.

3,676,363

PRODUCTION OF WEIGHTED MICROCAPSULAR MATERIALS

Benjamin Mosier, 5139 S. Braeswood, Houston, Tex.

Continuation of Ser. No. 451,285, April 27, 1965, abandoned, which is a continuation-in-part of Ser. No. 316,763, Oct. 16, 1963, abandoned. This application Sept. 4, 1969, Ser. No. 855,100
Int. Cl. B44d *1/02*; B01j *13/02*; C23f *11/14*
U.S. Cl. 252—316 16 Claims



A process for production of weighted liquid center microcapsules by coacervation of a macro-colloid from an emulsion having minute droplets of a substantially water-immiscible organic solvent containing a chemical treating agent as the dispersed phase of an aqueous solution of macro-colloid as the continuous phase wherein a powdered metal compound is mixed into the aqueous phase prior to encapsulation resulting in weighted microcapsules having a specific gravity of 1.3 to 2.6. The powdered metal compound functions as an auxiliary wetting agent as well as a weighting agent.

3,676,364

REGENERATION OF NICKEL-ALUMINUM CATALYSTS BY POLYCARBOXYLIC ACID WASHING

John Stuart Coates, Houston, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 23, 1970, Ser. No. 74,547
Int. Cl. B01j *11/30*, *11/02*
U.S. Cl. 252—413 10 Claims

The method of regenerating a granular, foraminous nickel-aluminum catalyst which has been activated by removing about 2–50 percent of the aluminum from a nickel-aluminum alloy originally containing about 25–60 percent by weight of nickel and about 40–75 percent by weight of aluminum and which has lost activity through use as a fixed-bed catalyst in the preparation of butane-1,4-diol by the continuous hydrogenation of an aqueous mixture containing about 30–80 percent by weight of water and diol selected from the group consisting of 2-butyne-1,4-diol and 2-butene-1,4-diol at a temperature of about 60–150°C., a hydrogen pressure of about 100–400 atmospheres and a superficial gas velocity of at least about 0.5 foot per minute which comprises washing the catalyst with a wash medium consisting essentially of about 90–99 percent by weight of water and about 1–10 percent by weight of a polycarboxylic acid selected from the group consisting of citric and succinic acids. Such catalysts can be reactivated by first washing with the above polycarboxylic acid solution and then treating with a dilute aqueous alkali metal hydroxide solution, thereby removing additional aluminum from the alloy. Catalysts which have become fouled through use of an aqueous feed mixture containing dissolved calcium ions can be regenerated by washing the catalyst with the above polycarboxylic acid solution until the wash liquid no longer becomes saturated with calcium ions.

3,676,365

METHOD FOR MANUFACTURING ACTIVATED CARBON AND APPARATUS THEREFOR

Yoshihiro Shirai, Osaka; Hirohiko Ichikawa, Kyoto; Akira Yoshida, Nishinomiya; Naotake Uchida, Osaka; Masaru Tsuji, Takarazuka, and Zenji Matsumoto, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Continuation-in-part of Ser. No. 599,175, Dec. 5, 1966, abandoned. This application March 2, 1970, Ser. No. 15,743
Claims priority, application Japan, Dec. 6, 1965, 40/75158; Dec. 7, 1965, 40/75424
Int. Cl. C01b *31/08*
U.S. Cl. 252—422 6 Claims

In preparing activated carbon by carbonizing and then activating cellulosic material impregnated with activating agent, the process of the invention is characterized by continuously supplying said activating agent-impregnated material into a carbonizing zone containing previously carbonized cellulosic material at such a constant flow rate as to allow the impregnated material to reside in the carbonizing zone at least for 15 minutes and carbonizing the impregnated material in said carbonizing zone with the carbonized cellulosic material which is heated at 150° to 350° C. by counter currently supplied hot gases and which forms an agitated fluidized bed by being fluidized with the hot gas stream and being stirred by a mechanical means.

3,676,366

PROCESS FOR THE PRODUCTION OF HIGHLY POROUS BEAD-FORM SILICA CATALYST SUPPORTS

Ernst Podschus, Leverkusen; Ludwig Dorn, Koeln-Stammheim, and Gerhard Heinze, Schildgen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 19, 1969, Ser. No. 851,477
Claims priority, application Germany, Sept. 24, 1968, P 17 92 601.1
Int. Cl. B01j *11/44*
U.S. Cl. 252—448 10 Claims

Catalyst supports in bead form having a porosity of more than 60 percent formed by suspending finely divided silicate and/or silica fillers, carbonates, metal oxides and hydroxides compatible with a silica sol, in a silica sol so that the total weight of the solids is at least 50 percent by weight based on the silica content of the silica sol, dispersing the resulting mixture into drops of the required size, gelling the drops in a water-immiscible medium, separating the resulting granulate from the medium, subjecting the granulate to a heat treatment at 100° to 800° C, and subsequent acid treatment to remove a major portion of the cations, and washing the acid treated granulates.

3,676,367

ADSORBENT FOR BEVERAGES

Karl J. Raible, Grafelfing, Germany, assignor to Aktiengesellschaft Fur Brauerei-Industrie, Basel, Switzerland

Filed Nov. 13, 1969, Ser. No. 876,609

Claims priority, application Switzerland, Nov. 22, 1968, 17,453/68

Int. Cl. B01j *11/36, 11/40*

U.S. Cl. 252—451 31 Claims

The adsorbent based on montmorin minerals is preferably intended for the treatment of fermentable or fermented liquids, particularly of beer or wine and their precursors, and contains added, highly dispersed free silica, which has been produced in situ as non-gelatinous silica and which is localized between the layers of the clay mineral.

3,676,368

RARE EARTH-HYDROGEN EXCHANGED ZEOLITES

Julius Scherzer, Baltimore, and Edwin W. Albers, Annapolis, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 26, 1970, Ser. No. 67,284

Int. Cl. B01j *11/40;* C01b *33/28*

U.S. Cl. 252—455 Z 12 Claims

Alkali metal faujasite having a silica to alumina ratio in excess of about 3 is rate earth exchanged in an acid media at a pH of about 3.0 to 3.5, calcined, and washed to reduce the alkali metal oxide content thereof to a low level. The exchanged faujasite contains 6 to 14 percent by weight rare earth oxide and a concentration of hydrogen ions which imparts the desired catalytic activity. The present rare earth-hydrogen faujasite finds utility as a hydrocarbon conversion catalyst, and particularly as an ingredient in catalytic cracking catalyst compositions.

3,676,369

MANGANESE SILICATE-CONTAINING MINERALS IN THE FORM OF NODULES AND THEIR USE IN HYDROCARBON CONVERSION

Joseph N. Miale, Trenton, N.J., assignor to Mobil Oil Corporation

Continuation-in-part of Ser. No. 597,243, Nov. 28, 1966, Pat. No. 3,509,041. This application April 24, 1970, Ser. No. 31,766. The portion of the term of this patent subsequent to April 28, 1987, has been disclaimed.

Int. Cl. B01j *11/40, 11/06*

U.S. Cl. 252—454 4 Claims

A catalyst comprising a base-exchanged, calcined manganese silicate-containing mineral in the form of a manganese nodule, said mineral having hydrogen ions bonded thereto in an amount of at least 0.01 gram per 100 grams of said mineral; a method of preparing the same from naturally occurring manganese nodules and organic compound conversion with catalytically-active forms of said nodules.

3,676,370

NEODYMIUM OXIDE-BARIUM OXIDE CATALYST COMPOSITION

Ruth E. Stephens, Detroit, Mich., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 692,687, Dec. 22, 1967, abandoned. This application Aug. 31, 1970, Ser. No. 68,574

Int. Cl. B01j *11/00, 11/06, 11/40*

U.S. Cl. 252—455 R 5 Claims

The oxides of nitrogen content of a gas stream can be reduced by contacting the gas stream with a catalyst consisting essentially of neodymium oxide and barium oxide on a suitable support at elevated temperatures. The catalysts are especially useful in reducing the nitric oxide content of the exhaust gas of internal combustion engines.

3,676,371

HIGH OUTPUT ELECTRODE WITH STABILIZED ELECTRIC ARC

Dieter Zollner, Erlangen; Konrad Koziol, Rothenbach/Pegnitz; Bernhard Reichelt, Nurnberg-Laufamholz, and Wolfgang Lippert, Schwabach, all of Germany, assignors to C. Conradty, Nurnberg, Germany

Filed Jan. 30, 1970, Ser. No. 7,235

Claims priority, application Germany, Jan. 30, 1969, P 19 04 408.7

Int. Cl. H01b *1/06*

U.S. Cl. 252—507 1 Claim

A high output electrode of carbon or graphite and method of making same, according to which the electrode has incorporated therein a titanium-boron combination with or without carbides, said titanium-boron combination preferably containing at least one of the compounds TiB and TiB_2.

3,676,372

HYDROGENATED OLEFIN SULFONATE-FATTY ACID AMIDE DETERGENT COMPOSITIONS

Samuel H. Sharman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 24, 1968, Ser. No. 770,415

Int. Cl. C11d *3/066, 1/12*

U.S. Cl. 252—525 7 Claims

High performance detergent compositions comprise a mixture of hydrogenated olefin sulfonates and a selected amide or substituted amide.

3,676,373

DETERGENT COMPOSITIONS

Stanley C. Paviak, Shaler Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 20, 1970, Ser. No. 56,734

Int. Cl. C11d *3/065, 1/12*

U.S. Cl. 252—531 7 Claims

Detergent compositions are disclosed which incorporate as a builder a water-soluble salt of a copolymer consisting of ethyl benzene and succinic acid groups in a 1:1 ratio and having a molecular weight of at least 3,000 and, optionally, a poly-phosphate.

3,676,374

ENZYME-CONTAINING LIQUID DETERGENT COMPOSITIONS

Wahib Nassif Zaki, and Daniel Guy Jean Biard, both of Bruxelles, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 20, 1970, Ser. No. 91,596

Claims priority, application Luxembourg, Nov. 25, 1969, 59 883

Int. Cl. C11d *1/37, 1/83*

U.S. Cl. 252—551 6 Claims

Liquid detergent compositions comprising a mixture of from about 2 percent to about 35 percent of an alkane sulfonate, alpha-olefin sulfonate, or mixtures thereof having from about 10 to about 26 carbon atoms in the hydrocarbon chain; from about 2 percent to about 30 percent of an ethoxylated alcohol or alkyl phenol or sulfate thereof; and from about 0.001 percent to about 5.0 percent of enzyme. The detergent compositions have desirable enzyme activity upon storage and exhibit desirable levels of soil-removal performance.

3,676,375

ADAMANTYL EPOXIDE POLYMERS

Alfred E. Borchert, Cherry Hill, N.J., and Eugene C. Capaldi, Broomall, Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 686,842, Nov. 30, 1967, Pat. No. 3,536,732. This application June 12, 1970, Ser. No. 57,856
Int. Cl. C08g 23/02
U.S. Cl. 260—2 A 3 Claims

Novel compositions of matter comprising polymers of adamantyl epoxides and adamantyl epoxides useful as intermediates in the preparation of said polymers. The polymers are useful in making wax additives, gaskets and rubber-like compositions.

A process for the preparation of adamantyl epoxides comprising contacting an alkenyl adamantane with an oxidizing agent selected from the group consisting of organic peracids and their derivatives, inorganic peracids, halogenhydrins and their derivatives, hydrogen peroxide, and organic hydroperoxides.

3,676,376

LOW FLAME SPREAD POLYURETHANE FOAM CONTAINING BROMINE-CONTAINING POLYESTER RESIN

Glenn R. Svoboda, and Ronald W. Reineck, both of Grafton, Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.

Continuation-in-part of Ser. No. 747,829, July 26, 1968, abandoned. This application Jan. 4, 1971, Ser. No. 103,913
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 AV 10 Claims

A low-flame spread rating polyurethane foam includes as one of its polyol ingredients saturated polyester composition of low acid value having 20 to 30 percent bromine by weight and an —OH value of 350–550 formed from

a. tetrabromophthalic anhydride or acid;
b. an aliphatic dicarboxylic acid;
c. a polyol;
d. an aliphatic diol.

The polyester preferably has a viscosity less than 500,000 centipoises at 25° C. In such low-flame spread forms, the polyester is combined with prepolymers of a polyether polyol and a polyisocyanate, preferably polymethylene polypehnylene polyisocyanate.

3,676,377

PROCESS FOR PREPARING A THERMOSETTING ACRYLIC ENAMEL MODIFIED WITH CELLULOSE ACETATE BUTYRATE

Terry P. Anderson, Swartz Creek, and Fred W. Parker, Flint, both of Mich., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 3, 1970, Ser. No. 94,987
Int. Cl. C08g 37/32
U.S. Cl. 260—15 8 Claims

The improved process for preparing a thermosetting acrylic enamel modified with cellulose acetate butyrate comprises the following steps:

1. forming pigment chips by mixing pigment particles, cellulose acetate butyrate, and an organic plasticizer on a roll mill having one hot roll and one cold roll;
2. forming a mill base by dissolving the pigment chips prepared in Step (1) in an organic solvent;
3. blending the mill base with an acrylic polymer having free hydroxyl groups and carboxyl groups and with a melamine/formaldehyde resin which has been at least partially reacted with an aliphatic monohydric alcohol having one to four carbon atoms.

3,676,378

CONTINUOUS PRODUCTION OF EXPANDABLE THERMOPLASTICS

Eduard Heil, Limburgerhof; Hans-Georg Trieschmann, Hambach; Herbert Willersinn, Ludwigshafen; Herbert Bolte, Frankenthal, and Klaus Bronstert, Carlsberg, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Land Rheinland-Pfalz, Germany

Claims priority, application Germany Mar. 29, 1969, P 19 16 220.0
Filed March 25, 1970, Ser. No. 22,517
Int. Cl. C08f 47/10, 33/02
U.S. Cl. 260—2.5 E 4 Claims

Continuous production of styrene polymers which contain an expanding agent and which are in the form of granules by extrusion of a mixture of a melt of the polymer with the expanding agent and rapid cooling of the extruded mixture, wherein excess expanding agent is first mixed with the melt and then the excess of expanding agent is evaporated. In this way both the production of a homogeneous mixture and the cooling of the mixture prior to extrusion to temperatures just above the softening point of the mixture are facilitated.

3,676,379

POLYURETHANES

Donald Bob Parrish, and Ronnie Mac Pruitt, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 27, 1970, Ser. No. 23,508
Int. Cl. C08g 22/14, 22/44
U.S. Cl. 260—2.5 AQ 13 Claims

Novel polyurethanes are prepared in the novel process which comprises reacting a polyisocyanate, such as toluene diisocyanate, with an oxaminated polyol. The oxaminated polyols described herein are polyols which have been reacted with a mixture of an N-substituted aziridine and a monoepoxide; such as polyoxypropylene glycol which has been reacted with a mixture of N-ethyl aziridine and ethylene oxide.

3,676,380

LOW FRIABILITY POLYISOCYANURATE FOAMS

Alexander McLaughlin, Meriden, and James S. Rose, Guilford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed May 19, 1969, Ser. No. 825,941
Int. Cl. C08g 22/48
U.S. Cl. 260—2.5 AW 12 Claims

High temperature resistant, flame resistant polyisocyanurate polymers with superior characteristics of friability are disclosed. These polymers are obtained by first preparing an isocyanate-terminated prepolymer consisting of 1 percent to 10 percent by weight of an aliphatic diol and 99 to 90 percent by weight of a polymethylene polyphenyl isocyanate (consisting of 35 to 85 percent by weight of methylenebis(phenyl isocyanate). The prepolymer is polymerized in the presence of a tertiary amine and a monomeric homocyclic polyepoxide and/or a polyol. The novel foams, useful in thermal insulation and like applications where resistance to high temperatures and low flame spread requirements must be met, are particularly useful in applications where vibration is a factor, having a friability factor approximately one half that of prior isocyanurate linked cellular foams.

3,676,381

SEALANT FOR PNEUMATIC TIRES

Joseph J. Silverstein, Woodmere, N.Y., assignor to Engine Power Corp., College Point, N.Y.

Filed Feb. 18, 1969, Ser. No. 800,254
Int. Cl. C08l 41/06, 37/00
U.S. Cl. 260—17.4 R 2 Claims

A self-sealing lining is provided in pneumatic tires which includes an aqueous blend of a blocking agent, a binding agent, an adhesive agent and a diluent.

3,676,382

ADHESIVE FOR REGENERATED CELLULOSE

Albin F. Turbak, and Henry J. Rose, both of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Continuation-in-part of Ser. Nos. 779,230, Nov. 26, 1968, abandoned, and Ser. No. 731,519, May 23, 1968, Pat. No. 3,630,826, and Ser. No. 718,343, April 3, 1968. This application May 19, 1970, Ser. No. 38,911

Int. Cl. C08g *22/04*

U.S. Cl. 260—18 TN 5 Claims

A novel adhesive for sealing or joining sheets or films of regenerated cellulose or fiber-reinforced regenerated cellulose comprises a fluid, organic solvent solution having a solute comprising a film-forming polymeric polyisocyanate, and a curing agent for the polyisocyanate including a plasticizer ingredient, such as a polyol or a reaction product of a polyol with ethylene oxide or the like, and a surfactant ingredient, such as a fatty acid partial ester of sorbitan. The coating composition may be used to seam sheets of regenerated cellulose or paper-reinforced regenerated cellulose into tubular form or in forming cemented end closures on tubes of regenerated cellulose or paper-reinforced regenerated cellulose. The adhesive composition is preferably applied in a very thin film, allowed to penetrate into the regenerated cellulose substrate, and cured by heating at an elevated temperature, e.g. 300°–320°ζ f., for about 20–30 sec., more or less.

3,676,383

NON-AQUEOUS ELECTROPHORETIC COMPOSITIONS COMPRISING LIQUID NITROALKANES AS A SOLVENT

Luciano C. Scala, and Wilford O. Bartlett, both of Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 661,687, Aug. 18, 1967, abandoned. This application Dec. 19, 1969, Ser. No. 886,778

Int. Cl. C09d *3/64, 5/24;* C23b *13/00*

U.S. Cl. 260—22 R 5 Claims

A process for the electrophoretic coating or repair of flaws in insulation of electrical components which employs non-aqueous solutions comprising liquid nitroalkanes as a solvent, consisting essentially of a resin dissolved in the solvent together with surface active agents, and desirably containing small amounts of a finely divided inorganic filler, to provide improved coverage on sharp edges of members being coated. The electrophoretically applied coating is then heat treated.

3,676,384

COPOLYMERS OF HYDROXYALKYL METHACRYLATES AND AN ACRYLATE OF METHACRYLATE ESTER REACTED WITH A PARTIALLY EPOXIDIZED DRYING OIL

Alfred E. Rheineck; Paul L. Nielsen, both of Fargo, N. Dak., and Teng H. Khoe, Peoria, Ill., assignors to North Dakota State University Memorial Foundation, Fargo, N. Dak.

Filed May 6, 1970, Ser. No. 35,299

Int. Cl. C08f *27/00*

U.S. Cl. 260—23 EP 13 Claims

Coating compositions based upon acrylic resin copolymers having pendent reactive groups and a partially epoxidized drying oil. A partially epoxidized oil, as derived from linseed oil or safflower oil, is reacted in about equal oxirane-hydroxyl molar amounts with a copolymer of a hydroxyl-lower alkyl methacrylate with an acrylic monomer or mixture of monomers, such as methyl methacrylate and ethyl acrylate and homologous esters. Two alternate procedures, method A and method B are described. The resulting compositions form air drying coating films which are hard, glossy, flexible, non-yellowing, and chemically resistant. Baked films may also be obtained and these are very hard, glossy, flexible and chemically resistant.

3,676,385

COATING COMPOSITIONS OF ACRYLIC-EPOXY ESTER GRAFT COPOLYMERS UTILIZING AZIRIDINYL ALKYL ACRYLATE OR METHACRYLATE IN THE COPOLYMER

Aloysius N. Walus, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1970, Ser. No. 100,806

Int. Cl. C08f *45/34;* C08g *51/34*

U.S. Cl. 260—32.8 R 14 Claims

The novel coating composition consists essentially of a graft copolymer dissolved in an organic solvent wherein the backbone of the graft copolymer is of polymerized constituents of an alkyl acrylate, an alkyl methacrylate in which the alkyl groups have one to three carbon atoms or styrene and also can contain acrylic constituents having adhesion promoting groups; the copolymer has graft into the backbone through a coupling unit of an aziridinyl acrylate or an aziridinyl methacrylate a side chain of an epoxy ester. The composition forms a high quality coating and is useful as a primer or as sealer composition in the manufacture of automobiles and trucks.

3,676,386

GASKET-FORMING SOLVENT-BASED COMPOSITIONS CONTAINING STYRENE-BUTADIENE BLOCK COPOLYMERS

Mannie Brenner, Cambridge; Fred L. Chase, Arlington, and Arthur J. Leydon, Waltham, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Jan. 5, 1970, Ser. No. 801

Int. Cl. C08d *9/12*

U.S. Cl. 260—27 7 Claims

Gasket-forming compositions based on styrene-butadiene block copolymers blended with a minor portion of random styrene-butadiene copolymer and polyisobutylene are prepared by conventional rubber compounding techniques in the presence of low molecular weight polyethyethylene. Fillers and solvents are used to complete the formula.

3,676,387

STABLE ELASTOMERIC POLYMER-OIL COMBINATIONS

James A. Lindlof, White Bear Lake, Minn., assignor to Minnesota Mining and Manfacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 574,943, Aug. 25, 1966, abandoned. This application Dec. 21, 1970, Ser. No. 100,520

Int. Cl. C08d *13/22;* C08k *1/28;* C08f *47/00*

U.S. Cl. 260—28.5 B 10 Claims

A highly elastic synthetic polymer-oil combination meltable at high temperatures for casting from a liquid state, comprising 5 to 30 percent by weight of an unvulcanized elastomeric block copolymer composed of terminal glassy or resinous polymer blocks and a central elastomeric polymer block, and 70 to 95 percent by weight of a stable paraffin oil of low volatility and which has a flash point in excess of the melting temperature of the gel.

3,676,388

METHOD OF PREPARING ANTIFOULANT COATING COMPOSITIONS AND RESULTING PRODUCT

William R. Davie, Hopewell Township, Beaver County, Pa., assignor to Porter Paint Co.

Continuation-in-part of Ser. No. 574,943, Aug. 25, 1966, abandoned. This application Oct. 14, 1968, Ser. No. 767,483

Int. Cl. C08g *51/52;* C08f *45/28*

U.S. Cl. 260—28 14 Claims

An antifoulant coating composition and preparation method in which the final composition is composed of two Components "A" and "B" mixed immediately before the composition is applied, and usually an inert filler introduced at least in part via Component "A". The active ingredient of Component "A" is a base formed of coal-tar pitch or

equivalent and epoxy resin. The active ingredients of Component "B" are a curing agent for the epoxy resin and a solid organotin toxicant. Component "B" may be either a slurry of needle-like crystals of toxicant, or the toxicant may be dissolved in a suitable solvent. In the latter case the toxicant precipitates as needle-like crystals when Components "A" and "B" are mixed. The invention produces a composition of a viscosity which makes it easy to apply.

3,676,389

FLAME PROOFING COMPOSITIONS

Robert C. Putnam, Mountain Lakes, N.J., and Jeffrey W. Young, Norristown, Pa., assignors to Polaris Chemical Corp., Manville, N.J.

Filed June 12, 1970, Ser. No. 45,887

Int. Cl. C08g *51/82*

U.S. Cl. 260—29.4 UA **12 Claims**

Aqueous flame-proofing compositions are disclosed which contain a foaming agent; a mixture of urea or thiourea and a polyhalo (Br, Cl) propanol ester of phosphoric, phosphoramidic or phosphorodiamidic acid, phosphoramide, its base-addition salts or mixtures thereof; a water-soluble amine-aldehyde resin, and an acid-generating catalyst.

3,676,390

COMPOSITIONS OF POLYMERS OF BICYCLA (2.2.1) HEPTENE-2 AND DERIVATIVES

Jean Vergne; Leon Solaux; Jean-Claude Robinet, and Philippe Lacroix, all of Verneuil-en-Halatte, France, assignors to Charbonnages De France, Paris, France

Continuation-in-part of Ser. No. 739,881, June 25, 1968, abandoned. This application Jan. 20, 1971, Ser. No. 107,953

Claims priority, application France, June 27, 1967, 112114; May 16, 1968, 152120

Int. Cl. C08f *45/40, 45/28*

U.S. Cl. 260—31.8 HR **20 Claims**

The invention relates to a vulcanized elastomer composition consisting essentially of a vulcanized mixture of (1) a macromolecular polymer compound selected from the group consisting of substantially amorphous polymers of bicyclo [2.2.1] heptene-2 and its substituted derivatives (2) at least one compound having a low volatility and a freezing point less than −30° C, this mixture of said polymer and said low volatility compound prior to vulcanization having a glass transition temperature lower than about −10° C, said vulcanized composition having a combination of good mechanical and physical properties.

3,676,391

COATING COMPOSITIONS FOR POLYOLEFIN SUBSTRATES

Frank De Ross, Zion, Ill., assignor to The Dexter Corporation, Windsor Locks, Conn.

Filed April 3, 1970, Ser. No. 25,546

Int. Cl. C08f *45/28, 45/30*

U.S. Cl. 260—33.6 UA **7 Claims**

Coating composition for priming untreated polyolefin substrates is provided comprising a resin of chlorinated polyolefin and ethylene/vinyl acetate copolymer in a stable solvent system. Also composition for protective and decorative coatings for direct application to untreated polyolefin substrate, comprising a resin of chlorinated polyolefin and acrylic copolymers.

3,676,392

RESIN COMPOSITIONS

Janis Robins, St. Paul, Minn., assignor to Ashland Oil Inc., Houston, Tex.

Continuation-in-part of Ser. No. 72,113, Sept. 14, 1970, and a continuation-in-part of Ser. No. 723,873, April 24, 1968, abandoned, and a continuation-in-part of Ser. No. 569,106, Aug. 1, 1966, Pat. No. 3,429,848, and a continuation-in-part of Ser. No. 536,180, March 14, 1966, Pat. No. 3,485,797. This application Jan. 26, 1971, Ser. No. 109,944

Int. Cl. C08g *5/06*

U.S. Cl. 260—38 **17 Claims**

Novel resin compositions comprising mixture of organic solvent soluble phenolic resin containing benzylic ether linkage and/or methylol end group with polyisocyanate and catalytic concentrations of a base. The resin compositions are capable of curing at room temperature and are useful as coating and binder compositions.

3,676,393

POLYESTERS STABILIZED BY PHOSPHORUS COMPOUNDS

Aleksander Plirma, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 650,219, June 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 348,786, March 2, 1964, abandoned. This application Oct. 14, 1968, Ser. No. 768,966

Int. Cl. C08q *51/58*

U.S. Cl. 260—45.7 P **3 Claims**

The invention concerns stabilization of polyester resins by incorporating in the resins certain types of phosphorous compounds. The application particularly relates to the process of stabilizing and to the stabilized compositions.

3,676,394

ANTIOZONANT RUBBER COMPOSITIONS

Robert W. Murray, Warren, N.J., and Paul R. Story, Athens, Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Continuation of Ser. No. 717,048, March 27, 1968, abandoned, which is a continuation of Ser. No. 650,209, June 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 490,736, Sept. 27, 1965, abandoned. This application Nov. 10, 1969, Ser. No. 871,652

Int. Cl. C08c *27/68*; C08f *45/60*

U.S. Cl. 260—45.9 R **5 Claims**

Vulcanized rubbery polymers may be effectively protected against ozone cracking by incorporation therein of certain non-primary aliphatic diamines, triamines and tetramines.

3,676,395

STABILIZERS FOR POLYSULPHIDES

Jean-Philippe Pied, Bully-Les-Mines, France, assignor to Societe Ethylene Plastique, Paris, France

Filed March 11, 1970, Ser. No. 18,707

Claims priority, application France, March 12, 1969, 6907016

Int. Cl. C08g *51/58, 51/60*

U.S. Cl. 260—45.9 R **16 Claims**

A method of stabilizing polylalkane sulphides) when heated, characterized in that the following substance is added to the polymer: from 0.5 to 10 percent by weight, with respect to the polymer, of a Mannich base or of a condensation product of a Mannich base and an aldehyde and, if required, a product chosen from among the acrylamides, the diisocyanates and the epoxides.

3,676,396

STABILIZATION OF BUTADIENE-STYRENE RUBBERS

Lynn B. Wakefield, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio

Filed July 15, 1970, Ser. No. 55,257
Int. Cl. C08f 45/60
U.S. Cl. 260—45.9 R 3 Claims

Polyalkylenepolyamines are used as stabilizers for solution-polymerized butadiene-styrene rubbers.

3,676,397

OXAZOLIDINONE-CONTAINING EPOXY RESINS AND PROCESS FOR THEIR PREPARATION

James A. Clarke, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 12, 1970, Ser. No. 80,254
Int. Cl. C08g 30/04
U.S. Cl. 260—47 EP 18 Claims

Novel oxazolidinone-modified epoxy resins are prepared by reacting a polyglycidyl ether of a polyhydric compound such as the diglycidyl ether of bisphenol A with cyanuric acid or thiocyanuric acid at a temperature in the range of 130° to 180° C. The oxazolidinone-modified epoxy resins prepared in this manner have a different structure and exhibit greater Izod impact strengths as compared to the oxazolidinone-modified epoxy resins prepared from polyisocyanates and polyglycidyl ethers.

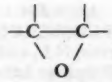
3,676,398

POLYMERIZABLE CROSSLINKABLE ESTERS OF POLYEPOXY COMPOUNDS

Gaetano F. D'Alelio, South Bend, Ind., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 25, 1968, Ser. No. 778,825
Int. Cl. C08g 30/10
U.S. Cl. 260—47 EP 21 Claims

Crosslinkable derivatives containing acrylic ester linkages are prepared by the reaction of a polyepoxide (compounds having a plurality of



groups) with an acrylic anhydride of a monocarboxylic acid, CH_2 C(Y)COOOCR'. The derivatives are crosslinked readily by ultraviolet light and ionizing radiations as well as by chemical initiators, and can be used for the preparation of homopolymers and copolymers. They find utility as casting, potting, laminating and molding compounds, as coatings and impregnants, electrical insulators and the like.

3,676,399

POLYBENZOXAZOLE AMIDES, ESTERS AND THIOESTERS, POLYBENZTHIAZOLE AMIDES, ESTERS AND, THIOESTERS AND PREPARATION THEREOF

Alan Sidney Lindsey, and Sydney Edwin Hunt, both of Teddington, England, assignors to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 800,251, Feb. 18, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,800
Claims priority, application Great Britain, Feb. 22, 1968, 8,684/68
Int. Cl. C08g 33/02
U.S. Cl. 260—47 CP 31 Claims

The invention comprises an aromatic polyamide polymer having oxy-or thio- groups in ortho or peri relationship to the amide structural units which can be cyclised to form benzoxazole or benzthiazole structural units by heating, and —CONH—, CO.O— or —CO.S— structural units which are not able to cyclise at the temperature at which the benzoxazole or benzthiazole units are formed. Such a polymer is prepared by reacting [A] 9 polybasic carboxylic aromatic acid or a functional derivative thereof, with [B] a bis o-amino thiophenol or a functional derivative thereof, with [B] a bis o-amino phenol or a bis o-amino thiophenol or a functional derivative thereof and [c] a third component of formula:

$$X—Ar—ZZ$$

where X and Z are the same or different and represent a hydroxyl, amino or thiol group, and Ar represents an aromatic group such that X and Z are not in ortho or peri relationship.

3,676,400

THERMOPLASTIC BLENDS OF HIGH-AMINE-END POLY-AMIDES AND ACID-CONTAINING OLEFIN POLYMERS

Melvin I. Kohan, Wilmington, Del.; Wayne H. Martin, Vienna, W. Va., and Chester K. Rosenbaum, Westover Hills, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 719,685, April 8, 1968, abandoned, which is a continuation-in-part of Ser. No. 517,935, Jan. 3, 1965, abandoned. This application Nov. 13, 1970, Ser. No. 89,457
Int. Cl. C08g 41/04
U.S. Cl. 260—857 L 7 Claims

The strength properties of blends of 50 to 90 percent by weight polyamide having a molecular weight of at least 10,000 with 10 to 50 percent by weight of an olefin copolymer containing from 0.1 to 10 mole percent of groups derived from an α,β-unsaturated carboxylic acid, are improved by having at least 60 percent of the polyamide end groups being amine end groups.

3,676,401

ENVIRONMENTALLY DISINTEGRATABLE PLASTIC COMPOSITIONS COMPRISING COPOLYMERS OF ETHYLENE AND CARBON MONOXIDE AND A DEGRADATION ACCELERATOR

James William Henry, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 849,265, Aug. 4, 1969, abandoned, Continuation of Ser. No. 411,354, Nov. 16, 1964, abandoned. This application Oct. 30, 1970, Ser. No. 85,784
Int. Cl. C08f 3/40, 13/04
U.S. Cl. 260—63 CQ 14 Claims

Compositions comprising (1) a copolymer of ethylene and 0.1 percent to 18 percent by weight of carbon monoxide, said percentage range being the proportion of carbon monoxide in the copolymer, and (2) an ultraviolet light degradable amount of an organometallic compound or salt of a common metal, e.g., ferricine, cobalt acetyl acetonate, etc., whereby film, articles of manufacture and especially packaging means, upon exposure to ultraviolet rays emitted by the sun are capable of accelerated deterioration thereby causing such materials including packaging means to decompose forming dust or flakes which may become embedded in the soil or carried away by rain water under those circumstances where they are thrown away out of doors so as to be exposed to natural environmental conditions.

3,676,402

LOW-TEMPERATURE CURABLE BLOCKED ISOCYANATE COMPOSITIONS CONTAINING A STANNOXANE CATALYST

Yutaka Matsui, Ashiya; Noritoshi Mise, Ikeda; Jugo Goto, Osaka, and Makoto Yokoo, Toyonaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 880,462, Dec. 3, 1969, abandoned, Continuation of Ser. No. 403,902, Oct. 14, 1964, abandoned. This application Oct. 29, 1970, Ser. No. 85,254
Claims priority, application Japan, Oct. 29, 1963, 38/58108
Int. Cl. C08g 22/42, 22/18
U.S. Cl. 260—75 NC 25 Claims

Octaalkyl-stannoxanes are provided herein which permit regeneration of an isocyanate group in a blocked isocyanate

compound at a lower temperature than previously possible. The resulting compounds with the regenerated isocyanante groups are useful, e.g., in the preparation of urethane resin in the conventional manner.

3,676,403

PROCESS FOR THE PRODUCTION OF INSULATING COATINGS ON ELECTRIC CONDUCTORS

Arnold Dobbelstein; Hans-Dieter Hille, both of Wuppertal-E., and Anneliese Geb. Koziolek Momm, Nierenhof, all of Germany, assignors to Dr. Krut Herberts & Co. vorm Otto Louis Herberts, Christbusch, Wuppertal-Barmen, Germany

Filed Sept. 3, 1969, Ser. No. 855,032

Claims priority, application Germany, July 23, 1969, P 19 37 312.7

Int. Cl. C08g *41/00*

U.S. Cl. 260—75 N **8 Claims**

A process and solution for the production of insulated coatings on electric conductors, such coating solution containing a catalytic amount of a reaction product of dicyano diamide with hydrazine, the reaction product being prepared at temperatures between room temperature and about 280° C.

3,676,404

METHYL METHACRYLATE COPOLYMERS

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 360,073, April 15, 1964, Continuation-in-part of Ser. No. 781,673, April 16, 1968. This application June 9, 1970, Ser. No. 44,879. The portion of the term of this patent subsequent to Nov. 25, 1986, has been disclaimed.

Int. Cl. C08f *19/10*

U.S. Cl. 260—78 UA **7 Claims**

Copolymers prepared from methyl methacrylate, electron deficient monomers, for example N-aryl maleimides and other ethylenically, unsaturated monomers copolymerisable therewith.

3,676,405

THERMOSET RESINS WITH HYDROXY ACRYLATE, METHYL METHACRYLATE AND BLOCKED ISOCYANATE

Santokh S. Labana, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 5, 1970, Ser. No. 43,894The portion of the term of this patent subsequent to May 2, 1989, has been disclaimed.

Int. Cl. C08q *22/06*

U.S. Cl. 260—77.5 CR **20 Claims**

Novel thermosetting resin powders which can be molded to form products characterized in tensile measurement, by high elongation-to-break, high tensile strength and modulus and a high glass transition temperature are prepared from a mixture of (a) a prepolymer formed by reacting (1) hydroxy ester of acrylic or methacrylic acid and a $C_2 - C_3$ diol with (2) methyl methacrylate and (b) a blocked di- or triisocyanate wherein the isocyanate groups are directly attached to an aromatic ring and deblock at temperatures in the range of about 120° to 160° C.

3,676,406

POLYAMIDE OBTAINED BY REACTION OF A β, β-BIS(ALKYLAMINO) DIETHYL SULFONE AND A DICARBOXYLIC ACID CHLORIDE

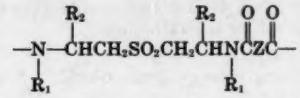
Albert C. Perrino, Cranston, and Michael G. Israel, East Providence, both of R.I., assignors to I.C. I/Organics/Inc., Stamford, Conn.

Division of Ser. No. 720,384, April 10, 1968, Pat. No. 3,576,879. This application June 1, 1970, Ser. No. 54,057

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **2 Claims**

Polyamides obtained by reacting a dibasic acid chloride and a β,β'-bis(alkylamino) diethyl sulfone. The polyamides are characterized by the repeating unit or methyl.



wherein Z is phenylene or alkylene of from two to eight carbon atoms, R_1 is unsubstituted alkyl, hydroxyalkyl, alkoxyalkyl or alkyl substituted aminoalkyl, the total number of carbon atoms in R_1 ranging between 1 and 18; and R_2 is hydrogen or-methyl. These polymers are film-forming and possess adhesive or rubber-like properties.

3,676,407

TETRAPOLYMERS AND PROCESS FOR PRODUCTION THEREOF

Henry L. Hsieh, and Ollie G. Buck, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 23, 1970, Ser. No. 74,844

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 R **9 Claims**

Tetrapolymers, which can be used as adhesives and as terminating agents for lithium initiated polymerizations, are prepared by polymerizing a mixture of an oxirane, a cyclic ether, an organic acid anhydride, and a monoisocyanate in the presence of an organometal compound.

3,676,408

METHYL VINYL ETHER COPOLYMERS

Herman S. Schultz, Easton; William Katzenstein, Broomal, and Earl P. Williams, Pen Argl, all of Pa., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 691,935, Dec. 20, 1967, Pat. No. 3,541,015, which is a continuation-in-part of Ser. No. 515,201, Dec. 20, 1965, abandoned. This application Oct. 23, 1969, Ser. No. 870,362

Int. Cl. C08f *15/10, 1/72*

U.S. Cl. 260—80.3 E **6 Claims**

Methyl vinyl ether is copolymerized with a comonomeric compound of the formula:

$$CH_2 - CHOR$$

wherein R is phenyl or alkyl of from three to 30 carbon atoms, to give a copolymer containing from 20 to 85 weight percent of said comonomeric compound and having an inherent viscosity (0.1 percent solution in toluene) at 25° C. in the range of 0.6 to 2.0. The resulting copolymer is soluble in hydrocarbon lubricating oils and exhibits a unique combination of properties, such as viscosity index improver, thickener, good shear stability, good 0° F. properties, and as ashless dispersant for gums, resins and other oxidation products, present or formed, in the lubricating oil during the operation of combustion engines of various types.

3,676,409

CO-AND TERPOLYMERS OF ALPHA OLEFINS WITH CYCLO PROPANE DERIVATIVES

Edward William Duck; Brian John Ridgewell, botn of Southampton, and John Michael Locke, Lyndhurst, all of England, assignors to The International Synthetic Rubber Company Limited, Southampton, England

Filed Dec. 13, 1968, Ser. No. 783,726

Claims priority, application Great Britain, Dec. 21, 1967, 58,132/67; Oct. 16, 1968, 49,100/68

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **7 Claims**

Novel co- and ter-polymers of I-olefins are obtained by

polymerizing at least one I-olefin with a novel adduct containing at least two ethylenically unsaturated linkages of

a. a carbene of formula: CXY where X and Y are each hydrogen, halogen or an organic radical and either

b. a polyene of the general formula

$$H_2C=CH-R$$

where R is a monovalent hydrocarbon group containing at least two ethylenically unsaturated linkages and having at least five carbon atoms not more than two unsaturated linkages of the polyene being conjugated.

or

c. a polyene of the general formula

$$HC=CH-R^1$$

where R' is a divalent hydrocarbon group containing at least two ethylenically unsaturated linkages and having at least five carbon atoms, not more than two unsaturated linkages of the polyene being conjugated.

3,676,410
ETHYLHEXYL ACRYLATE-ACRYLONITRILE-DIVINYLBENZENE TERPOLYMERS

Richard G. Bauer, and George P. Patitsas, both of Kent, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 24, 1970, Ser. No. 66,650
Int. Cl. C08f 15/40
U.S. Cl. 260—80.81 **3 Claims**

A chlorine-free acrylic ester/vinyl nitrile unvulcanizable copolymer and a cross-linked acrylic ester/vinyl nitrile chlorine-free copolymer exhibit a combination of clarity, good temperature flexibility and high temperature strength. The copolymer has good sprayability when diluted with 70 to 90 weight percent of certain non-aqueous solvents. The cross-linked clear interpolymer is a thermoplastic which can be fabricated into a variety of useful products.

3,676,411
TERNARY CATALYST SYSTEMS FOR THE POLYMERIZATION OF CONJUGATED DIOLEFINS

Morford C. Throckmorton, and William M. Saltman, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

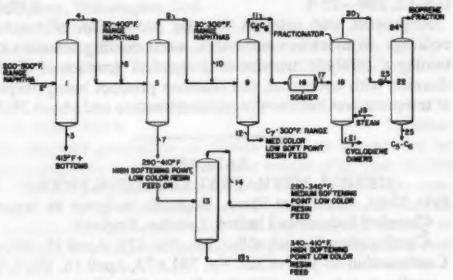
Filed Dec. 17, 1970, Ser. No. 99,257
Int. Cl. C08d 1/14, 3/06, 3/04
U.S. Cl. 260—82.1 **10 Claims**

There is disclosed a process for the polymerization of conjugated diolefins and mixtures thereof which comprises contacting at least one conjugated diolefin with a catalyst system comprising (A) at least one compound selected from the group consisting of metal salts of carboxylic acids, metal salts of inorganic acids and organic complex compounds of metals wherein the metal is selected from a group consisting of uranium and thorium, (B) at least one trialkylaluminum or dialkylaluminum hydride, and (C) at least one halide ion containing compound selected from a group consisting of hydrogen halides, organometallic halides wherein the metal is selected from Groups II, III-A and IV-A of the Periodic Table and halides of metals of Groups III, IV, V, VI-B and VIII of the Periodic Table.

3,676,412
METHOD FOR PREPARING RESIN FEED

John C. Winkler, and Corley P. Senyard, both of Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 800,803, Jan. 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 462,886, June 10, 1965, abandoned. This application Aug. 12, 1970, Ser. No. 63,311
Int. Cl. C08f 1/72
U.S. Cl. 260—82 **4 Claims**



A steam-cracked stream boiling in the 200°–500° F. range is fractionated into two fractions, one boiling above and the other below 410° F. The heavier fraction is discarded and the lighter fraction is again fractionated to separate it into a fraction boiling 290°–410° F. and a fraction boiling below 290° F. Low boiling naphthas boiling 30°–300° or 400° F. are preferably added to the lighter fractions from each fractionation step. A C_5–C_6 fraction is obtained by fractionating the overhead from the second fractionator and is heat soaked to remove the cyclodiene monomers prior to Friedel-Crafts polymerization.

3,676,413
PROCESS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF VINYL MONOMERS AND THE RESIN COMPOSITIONS OBTAINED THEREBY

Michel Boel, Rosignano-Solvay, Italy, and Roger Dechenne, Strombeek, Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed June 22, 1970, Ser. No. 48,184
Claims priority, application France, June 24, 1969, 6921207; Dec. 22, 1969, 6944530
Int. Cl. C08f 1/04, 3/30
U.S. Cl. 260—87.5 **6 Claims**

Vinyl monomers are polymerized and copolymerized in mass or in the gaseous phase in the presence of a water-soluble polymerization catalyst which is mixed with an inert support material and water in a small amount, such that the resin product varies in consistency from a powder to a moist cake. High yields of polymer is a desirable form are obtained by this process. Further, the support material is completely embedded in the resultant polymer, so that if the catalyst support is a reinforcing agent, in compounds which are reinforced may be obtained by this process.

3,676,414

PROCESS FOR POLYMERIZING α-OLEFINS

Bernd Diedrich; Karl Diether Keil, and Kurt Rust, all of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed June 25, 1969, Ser. No. 836,571

Claims priority, application Germany, June 27, 1968, P 17 70 718.5; June 27, 1968, P 17 70 727.6

Int. Cl. C08f *1/56, 3/06*

U.S. Cl. 260—88.2 8 Claims

The invention provides a process for homopolymerizing or copolymerizing ethylene in the presence of mixed catalysts comprising as component A the reaction products of specific tetravalent titanium compounds with chlorine-containing magnesium compounds containing at least 1.5 moles of OH groups per gram-atom of magnesium and as component B an organo-aluminum compound. Under a pressure below 20 atmospheres the yields are so high per unit of catalyst that the residues thereof need not be removed from the polymer. It is possible to produce polymers having a very narrow distribution of molecular weight and very good color and corrosion values.

3,676,415

PROCESS FOR POLYMERIZING α-OLEFINS

Bernd Diedrich; Karl Diether Keil, and Kurt Rust, all of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed June 25, 1969, Ser. No. 836,574

Claims priority, application Germany, June 27, 1968, P 17 70 719.6; June 27, 1968, P 17 70 730.1; June 27, 1968, P 17 70 725.4; June 27, 1968, P 17 70 716.3

Int. Cl. C08f *1/56, 3/06*

U.S. Cl. 260—88.2 8 Claims

The invention provides a process for homopolymerizing or copolymerizing ethylene in the presence of mixed catalysts comprising as component A the reaction products of specific tetravalent titanium compounds with halogen-free magnesium compounds containing 0.1 to 2 moles of OH groups per gram-atom of magnesium and as component B an organo-aluminum compound. Under a pressure below 20 atmospheres the yields are so high per unit of catalyst that the residues thereof need not be removed from the polymer. It is possible to produce polymers having a very narrow distribution of molecular weight and very good color and corrosion values.

3,676,416

ISOPRENE POLYMERIZATION PROCESS AND CATALYST SYSTEM THEREFOR

Tsutomu Makimoto, Kurashiki, Japan, assignor to Kurary Co., Ltd., Kurashiki, Japan

Continuation-in-part of Ser. No. 70,504, Sept. 8, 1970, abandoned. This application Nov. 18, 1970, Ser. No. 90,799

Claims priority, application Japan, Sept. 27, 1969, 44/77269

Int. Cl. C08d *1/14, 3/10*

U.S. Cl. 260—94.3 17 Claims

Polyisoprene exhibiting a high molecular weight, a high cis-1,4 content and containing essentially no gel is obtained by polymerizing isoprene in the presence of a catalyst system prepared from a trialkyl aluminum, a titanium tetrahalide and an aromatic polyether.

3,676,417

POLYMERIZATION USING A SUPPORTED CHROMIA ACTIVATED WITH A TIN ON GALLIUM COMPOUND

Bertalan Horvath, Berlin, Germany, assignor to Phillips Petroleum Company

Division of Ser. No. 727,706, May 8, 1968, Pat. No. 3,622,522. This application Feb. 25, 1971, Ser. No. 118,947

Int. Cl. C08f *1/66, 3/06*

U.S. Cl. 260—94.9 D 5 Claims

A catalyst is formed by combining a support material with (1) a chromium-containing compound such as chromium trioxide and (2) at least one of a gallium-containing compound such as gallium isopropoxide, and a tin-containing compound such as tin isopropoxide, and then activating the catalyst by heating at a temperature of at least 1,700° F. Polymers such as polyethylene formed using the catalyst of this invention have a narrow molecular weight distribution.

3,676,418

CATALYTIC PRODUCTION OF OLEFIN POLYMERS

Kijuro Tashiro, and Masuzo Yokoyama, both of Inashiki-gun, Ibaraki-ken, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo-to, Japan

Filed July 16, 1969, Ser. No. 842,386

Claims priority, application Japan, July 20, 1968, 43/50907

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—88.2 6 Claims

A Ziegler-type polymerization catalyst comprising a first catalyst component containing a transition metal compound and a second catalyst component containing an organometallic compound, which first catalyst component contains a silicon compound. Preparation of the first catalyst component and production of olefin polymers are also disclosed.

3,676,419

PROCESS FOR PRODUCING FINE POLYETHYLENE POWDER

Masaaki Takehisa; Shiro Senrui, and Hayato Nakajima, all of Gunma-ken, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 28, 1969, Ser. No. 803,990

Claims priority, application Japan, March 4, 1968, 43/13630

Int. Cl. C08f *47/02*

U.S. Cl. 260—94.9 F 3 Claims

It has been found that a fine powder of polyethylene, the average particle size of which is not more than 100 microns in diameter, is obtained by polymerizing ethylene at a temperature lower than the melting point of the produced polyethylene, by means of irradiation of an ionizing radiation or free radical initiator, dispersing the thus produced powder polyethylene in a water-miscible liquid dispersing medium which wets the polyethylene but does not substantially dissolve it, and the surface tension of which is not more than 32.5 dyne/cm, to dissociate the agglomerated polyethylene powder particles washing the dissociated polyethylene powder particles with water, and drying the particles.

3,676,420

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITION

Michael Fulton; John Darrell Jones, and Christopher A. Pearce, all c/o Midland Silicones Limited, Reading, England

Filed April 15, 1970, Ser. No. 28,937

Claims priority, application Wales, April 25, 1969, 21329/69

Int. Cl. C08f *21/01*

U.S. Cl. 260—185 5 Claims

A two package room-temperature vulcanizable silicone rubber stock comprising (1) an α,ω-dihydroxydior-

ganopolysiloxane polymer and (2) a mixture of (a) a cross-linking agent selected from trialkoxysilanes, tetra-alkoxysilanes and alkylpolysilicates, (b) a condensation catalyst and (c) an alkoxy endblocked diorganopolysiloxane.

3,676,421

ORTHO-CHLORINATION OF AZOBENZENE

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 26, 1969, Ser. No. 880,376
Int. Cl. C07c *107/06*
U.S. Cl. 260—205 **10 Claims**

A method of chlorinating azobenzene in the ortho positions by employing a palladium chloride catalyst in the presence of water and an organic compound in which azobenzene is soluble.

3,676,422

5'ADAMANTOYL-2'-DEOXY-5-METHYLAMINOURIDINE

Tsung-Ying Shen, Westfield, and Kay H. Boswell, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sept. 17, 1970, Ser. No. 73,206
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **1 Claim**

A novel nucleoside, 5'-adamantoyl-2'-deoxy-5-methylaminouridine is prepared by adamantoylation of 5-methylamino-2'-deoxyuridine (MADU), using β,β,β-trichloroethoxycarbonyl as a protective group on the 5-methylamino substituent. The compound is useful as an antiviral agent, specifically against herpes Keratitis in tissue culture.

3,676,423

AMPHOTERIC CELLULOSE AND PROCESS FOR THE PREPARATION THEREOF

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa

Filed Sept. 29, 1969, Ser. No. 862,051
Int. Cl. C08b *11/00*
U.S. Cl. 260—212 **17 Claims**

Amphoteric cellulose which contains both cationic and anionic groups linked to the cellulose molecule, and which has an isoelectric point, is prepared. The products can be made to have an affinity for anionic or cationic substances, e.g., acid or basic dyes or resins, by lowering or raising their pH.

3,676,424

AZIRIDINE SALTS OF DIBASIC ACIDS

Ray C. Christena, Wichita, and Earnest L. Johnston, Clearwater, both of Kans., assignors to Vulcan Materials Company, Birmingham, Ala.

Filed Aug. 31, 1970, Ser. No. 68,493
Int. Cl. C07d *45/00*
U.S. Cl. 260—239 E **11 Claims**

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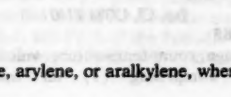
An aziridine salt of the formula:



wherein.

R^1 is alkylene, arylene, or aralkylene, wherein one or all of the hydrogen atoms thereof can be substituted with F, Cl, Br, lower alkyl and/or lower alkoxy; and

R^2 and R^3 are hydrogen, alkyl, or aryl.

Process for producing polyesteramides by reacting the above salt with a polycarboxylic acid and a polyhydric alcohol are described.

3,676,425

PROCESS FOR THE SEPARATION OF HMX FROM MIXTURES COMPRISING RDX AND HMX

Ralph E. Dawson, and Donald M. Mahaffey, both of Kingsport, Tenn., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 6, 1970, Ser. No. 78,607
Int. Cl. C07d *55/16, 55/60*
U.S. Cl. 260—239 HM **12 Claims**

A process for the separation of HMX (cyclotetramethylenetetranitramine) from mixtures of RDX (cyclotrimethylenetrinitramine) and HMX whereby said mixtures are dissolved in hot, water-saturated cyclopentanone and the RDX and HMX are thereafter selectively precipitated.

3,676,426

2-(1-HYDROXYALKYLIDENE)-3-OXO STEROIDS

Raymond O. Clinton, New York, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 793,292, Feb. 16, 1959, which is a continuation-in-part of Ser. No. 723,148, March 24, 1958, abandoned. This application Nov. 22, 1968, Ser. No. 778,345
Int. Cl. C07c *173/00, 173/10*
U.S. Cl. 260—239.55 R **18 Claims**

Steroido[3.2-c]pyrazoles, having endocrinological, including anabolic, activities, are prepared by interacting 2-(1-hydroxyalkylidene)-3-oxo steroids with hydrazine or a substituted hydrazine. The intermediate 2-(1-hydroxyalkylidene)-3-oxo steroids are in turn prepared by interacting a 3-oxo steroid with a lower-alkyl lower-alkanoate in the presence of a strong base.

3,676,427

PROCESS FOR THE MANUFACTURE OF THE DISODIUM SALT OF ALPHA-CARBOXYBENZYLPENICILLIN

Daniel P. O'Shea, Groton, and Susumu Nakanishi, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 26, 1971, Ser. No. 109,934
Int. Cl. C07d *99/16, 99/18*
U.S. Cl. 260—239.1 **5 Claims**

An improved process for the manufacture of the crystalline disodium salt of α-carboxybenzylpenicillin from solutions of disodium α-carboxybenzylpenicillin.

3,676,428

DIBENZODIAZOCYCLOTETRADECADIENE COMPOUNDS

Irving M. Goldman, Niantic, and Jerry K. Larson, New London, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed June 2, 1969, Ser. No. 829,714
Int. Cl. C07d *53/00*
U.S. Cl. 260—239 DD **4 Claims**

3,4,10,11-Dibenzo-1,8-diazacyclotetradeca-3,1-dienes and pharmaceutically acceptable acid addition salts useful as hypoglycemic agents, obtained by cyclization of the N-formyl derivatives of phenylpropylamine or substituted phenylpropylamines to form dihydrobenzazepin, which is dimerized to the corresponding dibenzodiazacyclotetradecatetraene, which is then reduced to the corresponding diazacyclotetradecadiene.

3,676,429

IMINO COMPOUNDS OF PENICILLINS AND SILYL ESTERS THEREOF

Helmut Wilhelm Otto Weissenburger, Rijswijk, Netherlands, assignor to Koninklijke Nederlandsche Gist-en Spiritusfabriek NV, Delft, Netherlands

Continuation-in-part of Ser. No. 681,002, Nov. 6, 1967, Pat. No. 3,499,909, which is a continuation-in-part of Ser. No. 622,907, March 14, 1967, abandoned. This application July 16, 1969, Ser. No. 842,344

Claims priority, application Netherlands, May 18, 1966, 6606872

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 10 Claims

Novel imino chlorides or bromides of silyl esters of penicillin compounds which are useful intermediates for the preparation of 6-amino-penicillanic acid and its derivatives.

3,676,430

PRODUCTION OF CAPROLACTAM

Clifford William Capp, Ewell; Brian Walton Harris, Horley, and Edwin George Edward Hawkins, Lower Kingswood, all of England, assignors to BP Chemicals (U.K.) Limited, Moor Lane, London, England

Filed May 8, 1968, Ser. No. 727,728

Claims priority, application Great Britain, June 2, 1967, 25,685/67

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A 9 Claims

Caprolactam is made by reacting 1,1′-peroxydicyclohexylamine with alkali metal methoxide dissolved in methanol at a concentration of at least 4 gram moles/liter.

3,676,431

PRODUCTION OF CAPROLACTAM

Clifford William Capp, Ewell, Surrey, and Keith Warwick Denbigh, Epsom, Surrey, both of England, assignors to BP Chemicals (U.K.) Limited, London, England

Filed May 21, 1968, Ser. No. 730,941

Claims priority, application Great Britain, June 2, 1967, 25,686/67

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A 7 Claims

In the production of caprolactam by reaction of 1,1′-peroxydicyclohexylamine with alkali metal alkoxides, the reaction is carried out in a reaction medium which is a mixture of methanol and dimethylsulphoxide.

3,676,432

11,12-DIHYDRODIBENZ[B,F]AZOCIN-6(5H)-ONES

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Aug. 31, 1970, Ser. No. 68,548

Int. Cl. C07d *41/08*

U.S. Cl. 260—239.3 T 4 Claims

5-(1-Hydrocarbon-3-pyrrolidinyl)-11,12-(dihydro- and dehydro)dibenz[b,fe[azocin-6(5H)-ones exhibiting antidepressant activity are disclosed.

3,676,433

IMPROVED PROCESS FOR THE 5α,6α-EPOXIDATION OF Δ_5-DOUBLE BONDS

Jekishan R. Parikh, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sept. 15, 1970, Ser. No. 72,490

Int. Cl. C07c *169/20, 169/22*

U.S. Cl. 260—239.55 R 11 Claims

An improved process for the stereoselective 5α,6α-epoxidation of isolated 5,6-double bonds in steroid molecules. The process of this invention comprises reacting a steroid containing an isolated 5,6-double bond with peroxytrifluoroacetic acid or peroxytrichloroacetic acid in an organic solvent of low polarity which promotes intramolecular hydrogen bonding in the peracid molecule, and in the presence of a basic buffering agent, to obtain the corresponding 5α,6α-epoxide.

An important characteristic of many pharmacologically active steroids is the presence of a methyl or halogen substituent at the 6α-position. The process of this invention provides an improved method for obtaining important 5α,6α-expoxide intermediates leading to these useful compounds.

3,676,434

CEPHALOSPORIN SALTS

Eddie H. Massey, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 29, 1970, Ser. No. 59,352

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 4 Claims

New and improved salts of cephalexin with anthraquinone-1,5-disulfonic acid, anthraquinone-2-sulfonic acid and 1-naphthol-5-sulfonic acid having solubilities in water less than 10 milligrams per milliliter.

3,676,435

1-(HYDROXY-1-PHENYL-4-AMINOBUTENYL)ADAMANTANE DERIVATIVES

Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Division of Ser. No. 715,507, March 25, 1968, Pat. No. 3,553,225. This application Aug. 12, 1970, Ser. No. 63,266

Int. Cl. C07d *29/16, 29/12*

U.S. Cl. 260—240 TC 3 Claims

1-(1-Hydroxy-1-phenyl-4-aminobutyl)-and 1-(1-phenyl-4-aminobutenyl)-adamantane derivatives in which the phenyl ring may be chloro, trifluoromethyl, methyl, methoxy or methylthio substituted and the amino group may be dilower-alkylamino, N-piperidinyl, N-pyrrolidinyl, N′-lower alkyl-N-piperazinyl or N-morpholinyl are useful as tranquilizers. The compounds are generally prepared by reaction of an appropriate 1-adamantyl phenyl ketone with an aminopropyl magnesium halide to give the hydroxybutanes followed by acid dehydration to furnish the butene derivatives.

3,676,436

NOVEL AMINOPHENYL ALKOXY COUMARINS

Durvasula V. Rao, Hamden; Adnan A. R. Sayigh, North Haven, and Henri Ulrich, Northfield, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed March 16, 1970, Ser. No. 20,063

Int. Cl. C07d *7/26*

U.S. Cl. 260—343.2 R 2 Claims

Alkoxy - substituted 3-(aminophenyl)-coumarins are prepared by hydrogenation of the corresponding nitrophenyl-coumarin derivative in the presence of Raney nickel or a noble metal catalyst. The novel amino compounds are useful, by virtue of fluorescence in ultraviolet light, as optical brighteners, as ultraviolet light filters, in the preparation of polyureas and photoresist polymers. Also, the novel amino compounds can be phosgenated to yield the corresponding isocyanates.

3,676,437

RECOVERY OF PURE CEPHALEXIN

Phillip Thomas Siddons, Pinner, England, assignor to Glaxo Laboratories Limited, Greenford, Middlesex, England

Filed Aug. 10, 1970, Ser. No. 62,706

Claims priority, application Great Britain, Sept. 26, 1969, 47,571/69

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 1 Claim

A process for the purification of crude cephalexin comprises contacting a crude acidic aqueous solution of cephalex-

in with methanol, adjusting the pH of the solution to about 4 to initiate crystallization of the cephalexin and separating off the mother liquor after crystallization has taken place.

3,676,438

DESACETYLARANOTIN

Norbert Neuss, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 15, 1969, Ser. No. 866,497
Int. Cl. C07d *93/20*
U.S. Cl. 260—243 R 1 Claim

Desacetylaranotin having anti-viral activity.

3,676,439

5,6-DIHYDRO-8,8-DIMETHYL-3-NITRO-8H IMIDAZO(2-1-C) (1,4)OXAZINE

Max Hoffer, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed April 13, 1971, Ser. No. 133,737
Int. Cl. C07d *87/20*
U.S. Cl. 260—244 R 1 Claim

5,6-Dihydro-8,8-dimethyl-3-nitro-8H-imidazo(2-1-c)(1,4)oxazine and its pharmaceutically acceptable salts are described. The compounds are antiprotozoal agents.

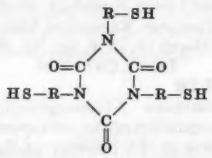
3,676,440

ISOCYANURATE-CONTAINING POLYTHIOLS

Lenore J. Los, Greenbelt, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,676
Int. Cl. C07d *55/38*
U.S. Cl. 260—248 NS 9 Claims

This invention describes compounds of high polarity which are useful as curing agents in curable liquid polymer systems containing polyenes and a free-radical initiator. Each of these polar compounds comprises the isocyanurate group as a central nucleus and bears substituents attached thereto at least two of which must contain a thiol group. In this class of compounds, the preferred members are isocyanurate-containing trithiols having the generalized structure as follows:



wherein R is an organic divalent moiety.

3,676,441

2-AMINO-4-TERTIARY BUTYLAMINO-1,3,5-TRIAZINES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed April 16, 1970, Ser. No. 29,252
Claims priority, application Switzerland, April 24, 1969, 6356/69
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 4 Claims

2-Amino-4-tertiary butylamino-1,3,5-triazines possessing in the 6-position a chlorine atom, a methoxy or a methyl-mercapto group are very effective weed killers and plant influencing agents.

3,676,442

SYNTHESIS OF PYRAZINES

Albert Bonzom, Rosendael, and Bernard Tramier, Marseille, both of France, assignors to Societe Nationale des Petroles D'Aquitaine, Tour Aquitaine, Courbevoie, France

Filed Nov. 21, 1969, Ser. No. 878,941
Claims priority, application France, Nov. 22, 1968, 68174829
Int. Cl. C07d *51/76*
U.S. Cl. 260—250 R 12 Claims

Hydrocarbon substituted pyrazines are prepared by the reaction of an ammonium compound having NH_4 or NH_2 groups with an acetylene compound having an oxygen atom linked to the acetylenic unit, the reaction being conducted in an acid medium, preferably containing formic acid or a formate.

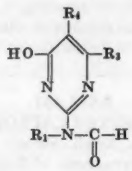
3,676,443

CERTAIN 2-FORMAMIDO-4-HYDROXYPYRIMIDINES

Brian Kenneth Snell, Ruscombe, and Nigel Douglas Bishop, Winnersh, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 18, 1970, Ser. No. 38,543
Claims priority, application Great Britain, May 28, 1969, 26,920/69
Int. Cl. C07d *51/38*
U.S. Cl. 260—256.4 C 3 Claims

Pyrimidine derivatives of formula:



wherein R_1 represents an atom of hydrogen or an alkyl radical and R_3 and R_4 represent atoms of hydrogen or halogen or alkyl radicals; and salts, ethers and esters thereof; and compositions containing them, are pesticidal.

3,676,444

HALOALKANOYLTETRAHYDROISOQUINOLINECARBO-XYLIC ACID ESTERS

Sydney Archer, and John W. Schulenberg, both of Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 826,681, May 21, 1969, Pat. No. 3,557,120, which is a continuation-in-part of Ser. No. 569,021, Aug. 1, 1966, abandoned. This application April 8, 1970, Ser. No. 26,766
Int. Cl. C07d *35/32*
U.S. Cl. 260—287 R 2 Claims

Ethyl 2-(α-halo lower-alkanoyl)-1,2,3,4-tetrahydro-6,7-dimethoxy-1-isoquinolinecarboxylates are intermediates for the preparation of 1,3,4,6,7,11b-hexahydro-9,10-dimethoxy-2H-pyrazino[2,1-a]isoquinolines, which possess sedative, tranquilizing and related pharmacodynamic effects.

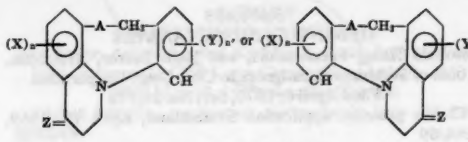
3,676,445

1,2-DIHYDROQUINOBENZOXA(OR THIA)ZEPINE DERIVATIVES

Harry Louis Yale, and Ramesh Petigara, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,533
Int. Cl. C07d *87/54*
U.S. Cl. 260—288 R 14 Claims

1,2-Dihydroquinobenzoxa(or thia)zepine derivatives are provided having the structures



wherein Z is O, or N—OH, A is O, S, SO or SO_2 and X, Y, *n* and *n'* are as defined hereinafter. These compounds are useful as antifungal agents and antibacterial agents.

3,676,446

PHENYLENE-BIS-DITHIOCARBAMIC ACID ESTERS

Manfred Schorr, Frankfurt/Main; Walter Durckheimer, Hattersheim/Main; Lothar Behrendt, Konigstein/Taunus, and Dieter Duwel, Hofheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/am Main-Hoechst, Germany

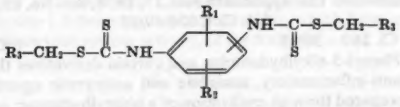
Filed Sept. 8, 1970, Ser. No. 70,485

Claims priority, application Germany, Sept. 20, 1969, P 19 47 746.4

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 E 7 Claims

Anthelmintically active phenylene-bis-dithiocarbamic acid esters of the formula



in which R_1 and R_2 are equal or different and represent hydrogen, halogen, alkyl or alkoxy having from one to six carbon atoms and R_3 is pyridyl, quinolyl or isoquinolyl which may be substituted by one or more alkyl radicals having from one to six carbon atoms. A process for their preparation.

3,676,447

3,4,5-TRIMETHOXYBENZAMIDES OF PHENYL-AND PYRIDYLAKYLAMINES

Wilfred A. Skinner, Portola Valley; John G. Johansson, Palo Alto, and Howard L. Johnson, Sunnyvale, all of Calif., assignors to Stanford Research Institute, Melo Park, Calif.

Filed June 24, 1970, Ser. No. 49,518

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM 22 Claims

3,4,5-Trimethoxybenzamides of pyridylalkylamines such as pyridylmethylamine and of phenylalkylamines such as phenylmethylamine, phenethylamine and β-hydroxyphenethylamine, as well as derivatives thereof wherein the aromatic nucleus in the amine is substituted by one or more hydroxy, carboxy, halo, aryl, alkyl, nitro, alkoxy, aryloxy or thioalkoxy groups. The compounds are relatively non-toxic and are useful for pharmacological purposes. They exert a specific effect on the central nervous system and a somewhat lesser effect on muscle function. They are useful as relatively mild tranquilizers in the control of anxiety states, excessive aggressiveness and hyperactivity.

3,676,448

2,2'-BIS(3-PYRIDINOLS)

Joseph G. Wirth, Schenectady, N.Y., assignor to General Electric Company

Filed Jan. 7, 1970, Ser. No. 1,318

Int. Cl. C07d *31/40*

U.S. Cl. 260—296 D 5 Claims

The novel compounds, 2,2'-bis(3-pyridinols), will fluoresce in the visible spectrum when exposed to ultraviolet light. The particular color emitted is dependent upon the other substituents on the pyridine ring. Generally, the parent compound and its substituted derivatives fluoresce green, unless the substituents have aromatic or aliphatic unsaturation which is conjugated with the unsaturation of the pyridine ring. This shifts the fluorescence to longer wavelengths, so that it is possible to produce compounds which fluoresce in the yellow and red portions of the visible spectrum. The compounds are readily soluble in common organic solvents and are thermally stable. They can be incorporated in various polymers to impart their fluorescent properties to the polymers. They can be incorporated in lacquers to produce films or applied as coatings on the envelope of ultraviolet lamps to produce various colored lights when energized.

3,676,449

1,3,4-THIADIAZOLE-BRIDGED THIOMETHYLENEPHENOL ANTIOXIDANTS

John Song, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 22, 1970, Ser. No. 5,090

Int. Cl. C07d *91/62*

U.S. Cl. 260—302 SD 2 Claims

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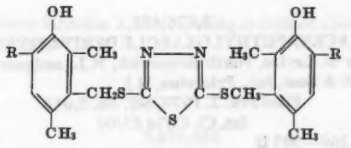
1, 3, 4 - thiadiazole-bridged bis-thiomethylene-phenol compounds of the formula



in which R is a tertiary alkyl of 4–12 carbon atoms are provided. They are excellent antioxidants for oxygen-sensitive organic materials, particularly polyolefins of 2–6 carbon atoms such as polypropylene plastics. They are prepared by condensing one mole of 2,5-dimercapto-1,3,4-thiodiazole with two moles of a 3-hydroxy-2.6-dimethyl-4-tertiary alkyl benzyl halide in the presence of an acid acceptor.

3,676,450

-4-(ISOTHI OCYANOPHENYL)-THIAZOLES

Rene Bosshard, Birsfelden; Kurt Gubler, Riehen; Ernest Aufderhaar, Kaiseraugst, and Paul Brenneisen, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 19, 1970, Ser. No. 82,188

Claims priority, application Switzerland, Oct. 30, 1969, 16249/69

Int. Cl. C07d *91/32*

U.S. Cl. 260—302 s 9 Claims

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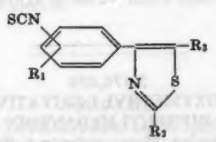
This invention concerns new 4-(isothiocyanophenyl)-thiazoles corresponding to the Formula I



(I)

wherein

R_1 represents hydrogen, the nitro group, halogen, a lower alkyl or alkoxy radical, or the isothiocyano group in a position other than the ortho-position to the isothiocyano group already present,

R_2 represents hydrogen, halogen, a lower alkyl, alkoxy or alkylthio radical, a dialkylamino radical, and

R_3 represents hydrogen or a lower alkyl radical,

and processes for the production of these compounds. These new compounds have antihelmintic properties. Compositions

containing these new 4-(isothiocyanophenyl)-thiazoles and/or their non-toxic salts as active components as well as a method for combatting helminths in warm-blooded animals organisms by administering these new compounds in therapeutically active doses are given. Of special interests are the 4-(isothiocyanophenyl)-thiazoles of Formula I wherein R_1 is hydrogen or halogen.

3,676,451

THIAZOLYLSALICYLIC ACIDS

Lewis H. Sarett, Skillman, and William V. Ruyle, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 673,273, Oct. 6, 1967, Pat. No. 3,558,641. This application June 9, 1970, Ser. No. 44,866
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 R 5 Claims

New salicylic acid compounds, particularly 5-(heterocyclic)-salicylic acid derivatives and process for their preparation are claimed. The new 5-(heterocyclic)salicylic acid compounds described have anti-inflammatory, anti-pyretic and analgesic activity.

3,676,452

ACENAPHTHYLOXAZOLE DERIVATIVES

Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 2, 1970, Ser. No. 8,016
Int. Cl. C07d *85/00*
U.S. Cl. 260—307 D 7 Claims

In addition, intermediates and a process for preparing the acenaphthyloxazoles are provided, which process comprises reacting an acenaphthenequinone with ethylene glycol in the presence of p-toluenesulfonic acid to form an acenaphthenequinone monoethylene ketal, reducing the ketal to the corresponding 1-hydroxy-2-acenaphthenone monoethylene ketal, hydrolyzing the ketal and reacting the resulting 1-hydroxy-2-acenaphthenone with succinic acid or acid anhydride to form the corresponding succinate and reacting the succinate with ammonium acetate and acetic acid to form the compounds of the invention.

3,676,453

OXAZOLE AND OXAZOL-5-ONE DERIVATIVES

Seemon H. Pines, Murray Hill, and Meyer Sletzinger, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 7, 1968, Ser. No. 774,213
Int. Cl. C07d *85/42*
U.S. Cl. 260—307 R 5 Claims

5-(dibenzyloxybenzoyloxy)-4-lower alkyl-2-substituted-oxazoles and 4-(dibenzyloxybenzoyl)-4-lower alkyl-2-substituted-oxazol-5-ones which are useful as intermediates.

3,676,454

ACYLOXYMETHYL DERIVATIVES OF DIPHENYLHYDANTOIN

Julius A. Vida, Boston, Mass., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 749,973, Aug. 5, 1968, Pat. No. 3,595,862. This application Aug. 31, 1970, Ser. No. 68,471
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 5 Claims

N,N'-Bis(acyloxymethyl) phenobarbital, N,N'-Bis(acyloxymethyl)barbital, 3-acyloxymethyl diphenylhydantoin, and N,N'-diacyloxy diphenylhydantoin compounds are described as well as therapeutic compositions containing them and their use as anticonvulsant agents.

3,676,455

HYDANTOIN DIISOCYANATES

Theobald Haug, Frenkendorf, and Hans Batzer, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation

Filed April 8, 1970, Ser. No. 26,778
Claims priority, application Switzerland, April 15, 1969, 5664/69
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 6 Claims

New bis-(1'-γ-isocyanatopropylhydantoinyl-3')-alkanes, for example 1,6-bis-[1'-(-γ-isocyanatopropyl)-5',5'-dimethylhydantoinyl-3']-n-hexane and 1,1'-methylene-bis-(3-γ-isocyanatopropylhydantoins), for example 1,1'-methylene-bis-(3-γ-isocyanatopropyl-5,5-dimethylhydantoin), and their use for the manufacture of polyurethanes by reaction of the new diisocyanates with polyhydroxyl compounds. The new diisocyanates are completely odorless and an irritation of the mucous membranes by these new diisocyanates has hitherto not been observed. The new diisocyanates are therefore preferentially used in the lacquer field.

3,676,456

DERIVATIVES OF 3-ARYL-5-ALKYLHYDANTOINS

Norbert Gruenfeld, Bronx, N.Y., assignor to Ciba-Geigy Corporation

Continuation-in-part of Ser. No. 717,035, March 28, 1968, abandoned. This application Feb. 27, 1970, Ser. No. 15,208
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 6 Claims

3-Phenyl-5-alkylhydantoins and certain derivatives thereof are anti-inflammatory, analgesic and antipyretic agents and are prepared through cyclization of a phenylhydantoic acid or ester. A typical embodiment is 3-(p-fluorophenyl)-5-methylhydantoin.

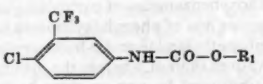
3,676,457

N-[3-TRIFLUOROMETHYL-4-CHLOROPHENYL]-CARBAMATES

Adolf Hubele, Riehen, and Otto Rohr, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation

Filed Feb. 4, 1969, Ser. No. 796,571
Claims priority, application Switzerland, Feb. 6, 1968, 1765/68
Int. Cl. C07c *101/00*
U.S. Cl. 260—471 6 Claims

The invention relates to compounds of the general formula



wherein R_1 represents an aralkyl or aralkenyl residue or a phenyl radical having four or five substituents or a five- to six-membered heterocycle which may be bound over an alkyl residue. The compounds are used for combating various types of pests, preferably bacteria and fungi.

3,676,458

(INDOLYMETHYL) MALONATE COMPOUND

Edmund Carl Kornfeld, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 719,666, April 8, 1968, Pat. No. 3,535,336, Division of Ser. No. 57,873, June 11, 1970. This application June 11, 1970, Ser. No. 57,872
Int. Cl. C07d *27/60*
U.S. Cl. 260—326.14 T 1 Claim

6-(Trifluoromethyl)tryptophane, useful as a non-nutritive sweetening agent and also useful in the synthesis of a corresponding pyrrolnitrin derivative; and intermediates useful in the synthesis of 6-(trifluoromethyl)tryptophane.

3,676,459
3-ARYLIMINO-1,2-DITHIOLS

Jorg Bader, Arlesheim, and Karl Gatzi, Basle, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 28, 1969, Ser. No. 828,766

Claims priority, application Switzerland, June 10, 1968, 8595/68

Int. Cl. C07d 71/00

U.S. Cl. 260—327 C **3 Claims**

3-Arylimino-4-chloro-5-thio-1,2-dithiols are disclosed as antifungal agents, which are particularly useful for the protection of plants against phytopathogenic fungi. Antifungal compositions containing them as active ingredients are also described.

3,676,460
BENZOXAZEPINE DERIVATIVES

Toshiyuki Hirohashi, Ashiya; Takahiro Izumi, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

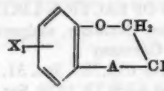
Filed March 24, 1970, Ser. No. 22,388

Claims priority, application Japan, March 28, 1969, 44/24232; March 31, 1969, 44/24974; May 6, 1969, 44/34964

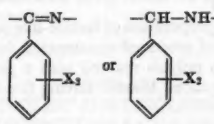
Int. Cl. C07d 87/54

U.S. Cl. 260—333 **5 Claims**

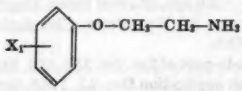
Novel 2,3-dihydro-1,4-benzoxazepine or 2,3,4,5-tetrahydro-1,4-benzoxazepine derivatives, which have strong central nervous system activity, of the formula:



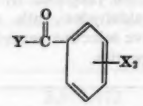
X_1 is hydrogen, halogen, $C^1 - C^3$ alkyl or $C^1 - C^3$ alkoxy and A is a group of the formula:



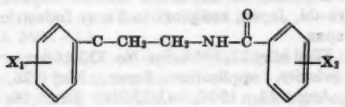
wherein X_2 is hydrogen, halogen, $C^1 - C^3$ alkyl or $C^1 - C^3$ alkoxy. These compounds are produced by contacting a phenoxyethlamine derivative of the formula:



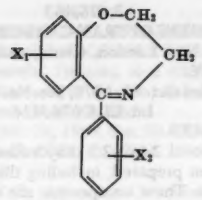
with a benzoylhalide derivative of the formula:



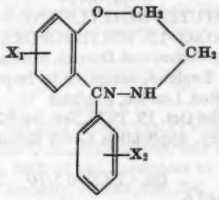
to yield an N-benzoyl phenoxyethlamine derivative of the formula:



and contacting the obtained N-benzoyl phenoxyethylamine derivative with a suitable dehydrating agent to yield a 2,3-dihydro-1,4-benzoxazepine derivative of the formula:



and further, if necessary, reducing the resultant 2,3-dihydro-1,4-benzoxazepine derivative to yield a 2,3,4,5-tetrahydro-1,4-benzoxazepine derivative of the formula:



in the above formulas X_1 and X_2 being as defined above, and Y being halogen.

3,676,461
1-OXA-A-NOR-STEROIDS

Georges Muller, Nogent sur Marne, and Roland Bardoneschi, le Vert Galant, both of France, assignors to Roussel UcLaf, Paris, France

Filed July 7, 1969, Ser. No. 839,706

Claims priority, application France, July 24, 1968, 160425

Int. Cl. C07d 5/34

U.S. Cl. 260—343.3 **8 Claims**

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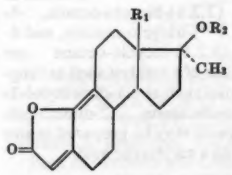
1-Oxa-13β-R_1-17α-methyl-A-nor-$\Delta^{(13),9}$-gonadienes of the formula



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wherein R_1 is alkyl of one to three carbon atoms and R_2 is acyl of an aliphatic carboxylic acid of two to four carbon atoms having antiandrogenic activity and their preparation and intermediates formed therein.

3,676,462
7,8,9,10-TETRAHYDRO (AND 7,8,9,10,11,12-HEXAHYDRO) 6H-DIBENZO [B,D] PYRANS

Harry G. Pars, Lexington, and Felix E. Granchelli, Arlington, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 642,187, May 29, 1967, abandoned. This application Jan. 8, 1970, Ser. No. 1,550

Int. Cl. C07d 7/20

U.S. Cl. 260—345.3 **3 Claims**

A series of novel 7,8,9,10-tetrahydro-6H-dibenzo [*b, d*] pyrans and 7,8,9,10,11,12-hexahydro-6H-dibenzo [*b,d*] pyrans having C.N.S. activity.

3,676,463

OXOBENZOFURAN CARBOXAMIDES

Saul P. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 15, 1970, Ser. No. 81,162
Int. Cl. C07d 5/34
U.S. Cl. 260—343.3 15 Claims

A series of novel 2-oxo-2,3-dihydrobenzofuran-3-carboxamides have been prepared, including their pharmaceutically acceptable salts. These compounds are useful in therapy as non-steroidal anti-inflammatory agents. Alternate methods of preparation are provided and the principal synthetic route is described in detail.

3,676,464

2-SUBSTITUTED BENZYLIDENE-4-PHENYL-3-HYDROXY-5-OXO -2,5- DIHYDROFURAN DERIVATIVES

Frederick Roger Foden, and Derrick Michael O'Mant, both of Macclesfield, England, assignors to Imperial Chemical Industries, Limited, London, England

Filed Oct. 19, 1970, Ser. No. 82,214
Claims priority, application Great Britain, Oct. 29, 1969, 52,969/69
Int. Cl. C07d 5/10
U.S. Cl. 260—343.6 4 Claims

2-Substituted benzylidene-e-phenyl-3-hydroxy-5-oxo-2,5-dihydrofuran derivatives, for example 2-(m-trifluoromethyl-α-methoxycarbonylbenzylidene)-4-phenyl-3-hydroxy-5-oxo-2,5- dihydrofuran, a process for their preparation, and pharmaceutical compositions. Compounds have anti-inflammatory, analgesic and antipyretic activity.

3,676,465

4-HYDROXY-1-METHYLOL 6-OXA(3.2.1.1^{3,8}) TRICYLONONANE

Arsene Isard, St. Genis Laval, and Francis Weiss, Pierre Benite, both of France, assignors to Ugine Kuhlmann, Paris, France

Division of Ser. No. 695,572, Jan. 4, 1968. This application May 25, 1970, Ser. No. 48,681
Claims priority, application France, Jan. 6, 1967, 6790194
Int. Cl. C07d 5/32
U.S. Cl. 260—346.2 M 1 Claim

4-hydroxyl-1-methylol-6-oxa (3.2.1)-bicyclo-octane, 4-hydroxy-1-methylol-6-oxa (3.2.1.1^{3,8})-tricyclo-nonane, and 4-hydroxy-1-methylol-6,8-dioxa (3.2.1)-bicyclo-octane are prepared by reacting in the presence of a catalyst such as tungstic acid, a peracid with a cyclic diol such as 1,1-dimethylol-3-cyclohexene, 2,2-dimethylol-5-norbornene, 2,2-dimethylol-3,4-dihydro (2H) pyran. The peracid may be prepared in situ by reacting hydrogen peroxide with a carboxylic acid.

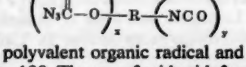
3,676,466

AZIDOFORMATE-ISOCYANATE COMPOUNDS

Harold M. Spurlin, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 22, 1969, Ser. No. 860,034
Int. Cl. C07c 117/00; C07d 109/00
U.S. Cl. 260—349 5 Claims

Disclosed are azidoformate-isocyanate compounds of the formula



where R is a polyvalent organic radical and x and y are integers from 1 to 100. The use of said azidoformate-isocyanate compounds to modify polymers, cross-link polymers, and adhere polymers to substrates selected from siliceous materials, metals and other polymer substrates is disclosed. Also disclosed are rubber tires reinforced with polyester tire cord which has been modified with an azidoformate-isocyanate compound.

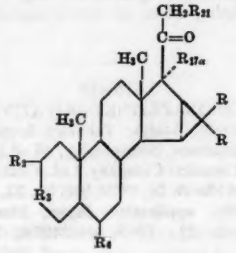
3,676,467

15, 16 SUBSTITUTED STEROIDS AND DERIVATIVES

Andor Furst, Basel; Peter Muller, Arlesheim; Marcel Muller, Frenkendorf, and Dieter Kagi, Basel, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed April 17, 1969, Ser. No. 817,178
Claims priority, application Switzerland, April 22, 1968, 5935/68
Int. Cl. C07c 169/32, 169/34
U.S. Cl. 260—397.3 34 Claims

Compounds of the formula



are described. The aforesaid compounds are useful as hormonal agents.

3,676,468

PREPARATION OF FACTICE-LIKE PRODUCTS

Gerhard Stolpa, Hilden, Germany, assignor to Henkel & Cie, GmbH, Dusseldorf, Germany

Continuation of Ser. No. 612,789, Jan. 31, 1967, abandoned. This application April 23, 1970, Ser. No. 29,732
Claims priority, application Germany, March 26, 1966, H 58924
Int. Cl. A23j 7/00; C07f 9/02
U.S. Cl. 260—403 4 Claims

Process for the preparation of factice-like products from oxidized polymers of esters of unsaturated fatty acids and/or resinic acids with polyols reacted with a phosphorus halide and products produced therein having fire-resistant properties.

3,676,469

PROCESS FOR THE PREPARATION OF HALOGENATED ESTERS

Wilbert H. Urry, Chicago, Ill., and Hsien Ying Niu, Southgate, Mich., assignors to Wyandotte Chemicals Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 551,555, May 20, 1966, abandoned. This application Dec. 12, 1968, Ser. No. 783,437
Int. Cl. C07c 67/00; C09f 5/00
U.S. Cl. 260—408 5 Claims

Halogenated esters are prepared by the free-radical initiated reaction of aldehydes with certain halogenated ketones. The esters have selective pesticidal activity and possess surface active properties.

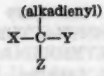
3,676,470

1,6-OCTADIENE DERIVATIVES AND THE PREPARATION THEREOF

Kuniyuki Takahashi; Go Hata, and Akihisa Miyake, all of Kamakura-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 27, 1968, Ser. No. 732,108
Claims priority, application Japan, May 26, 1967, 42/33114; Aug. 23, 1967, 42/53691; Dec. 19, 1967, 42/81022; Jan. 20, 1968, 43/2989; March 4, 1968, 43/13609
Int. Cl. C11c 3/00
U.S. Cl. 260—410 8 Claims

A compound represented by the general formula



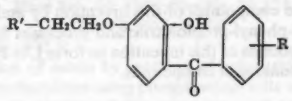
wherein X and Y each represent an electron attracting group and Z represents a hydrogen atom, a mono-valent hydrocarbon radical, a di-valent hydrocarbon radical bonded to X or Y, or an alkadienyl radical represented by the formula —CH$_2$—CH = CH—$CH_2CH_2CH_2CH$ = CH_2 or alkyl-substituted derivatives thereof, and a process for preparing said compounds by adding a 1,3-diene to an active methylene compound or hydrocarbon-substituted methylene compound having the electron attracting groups X and Y as represented by the general formula X — CH(Z) — Y,
wherein X, Y and Z have the same meaning as above, using a palladium compound or a platinum compound as catalyst.

3,676,471
4-(BETAHYDROXYETHOXY-2-HYDROXY-BENZOPHENONES) AND ESTERS THEREOF

Heinz Eggensperger, Gadernheim uber Bensheim; Volker Franzen, Heidelberg, and Wilfried Kloss, Kolmbach uber Bensheim, all of Germany, assignors to Deutsche Advance Produktion GmbH, Lautern/Odenwald, Germany

Filed Oct. 28, 1968, Ser. No. 771,272
Claims priority, application Germany, Dec. 21, 1967, P 16 43 307.1
Int. Cl. C07c *69/28, 49/82*; C08f *45/58*
U.S. Cl. 260—410.5 8 Claims

Compounds of the formula



wherein R is hydrogen, alkyl or aryl and R' is hydrocarbyl acyloxy, said compounds being useful for light-stabilization of polymeric compositions.

3,676,472
CERTAIN LINOLEIC AND LINOLENIC ACID ESTER FRACTIONS OF VEGETABLE OILS AND DERIVATIVES THEREOF

Frederick William Zilliken, Reinagen, Rhine, and Heinz Egge, Marburg, both of Germany, assignors to American Home Products Corporation, New York, N.Y.

Filed July 28, 1969, Ser. No. 845,511
Int. Cl. C07c *3/00*; A61k *27/00*
U.S. Cl. 260—410.9 R 4 Claims

This invention is concerned with prophylactically effective substances which are useful in protecting mammals against staphylococcal infection. These substances comprise the linoleic and linolenic acid ester fractions of vegetable oils and derivatives thereof. Further, it is concerned with a process for the preparation of some of these prophylactically effective substances.

3,676,473
PROCESS FOR PREPARING ORGANIC ACIDS

Alan F. Ellis, Murrysville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 7, 1969, Ser. No. 864,550
Int. Cl. C07c *51/32*
U.S. Cl. 260—413 9 Claims

A process for converting an alpha olefin to an organic carboxylic acid having one less carbon than the olefin which involves subjecting the alpha olefin to metathesis conditions to obtain an internal olefin having two less than twice the carbon number of the alpha olefin charge and thereafter subjecting the internal olefin so obtained to ozonolysis and oxidation to obtain the desired organic carboxylic acid.

3,676,474
MULTINUCLEAR π-COMPLEXES HAVING AT LEAST TWO METAL-COBALT BONDS

James H. Tsai, Sarnia, Ontario, and Glenn H. Anderson, Corunna, Ontario, both of Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 24, 1969, Ser. No. 879,608
Int. Cl. C07f *7/00, 7/24, 15/06*
U.S. Cl. 260—429 R 22 Claims

Multinuclear cobalt carbonyl π-Complexes having metal-cobalt bonds and which are useful as catalysts for the dimerization of norbornadiene are represented by the general formula:

$$Z_{4-m}MCo_m(CO)_{4m-2n}Y_n$$

wherein M is a Group 4a metal, Z is a halo, nitrato, alkyl, aryl or similar ligand, Y is a π-bonded diolefin ligand, *m* is 2, 3, or 4, and *n* is 1, 2, 3, or 4, but not greater than *m*.

3,676,475
HYDRIDES OF NICKEL COORDINATION COMPOUNDS

William C. Drinkard, Jr., Wilmington, and Richard V. Lindsey, Hockessin, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 847,442, Aug. 4, 1960, Pat. No. 3,538,142, which is a continuation-in-part of Ser. No. 682,623, Nov. 13, 1967, abandoned. This application July 6, 1970, Ser. No. 52,701
Int. Cl. C07f *15/04*
U.S. Cl. 260—439 R 16 Claims

Hydrides of nickel coordination compounds of the general formula $HNi(MYZ)_n^+X^-$ where M is P, As or Sb, Z is R or OR, where R is a hydrocarbyl radical of up to 18 carbon atoms or a hydrocarbyl radical of up to 18 carbon atoms substituted with any of —Cl, —O— or —CN, where Y is two Z's or either —R'— or —O—R'—O—, where —R'— is a divalent hydrocarbylene radical of from two to 12 carbon atoms, *n* is 3 or 4, and X^- is an anion of a protonic acid, particularly HSO_4^-, Cl^-, Br^-, Cn^-, CF_3COO^-, $AlCl_4^-$, or $ZnCl_3CN^-$ or BF_4^- and the process of preparing these hydrides from the corresponding nickel complex and acid as well as the process of isomerizing 3-pentenenitrile to 4-pentenenitrile using the hydrides.

3,676,476
METHOD FOR PREPARING TRIVALENT AND PENTAVALENT ANTIMONY ESTERS OF POLYHYDROXY COMPOUNDS

Michael J. Randolph, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1970, Ser. No. 93,833
Int. Cl. C07f *9/90*
U.S. Cl. 260—446 18 Claims

A method for the preparation of esters of pentavalent antimony and mixed esters of trivalent antimony and pentavalent antimony with polyhydroxy compounds having vicinal hydroxy groups in solutions of the polyhydroxy compounds or other polar organic solvents, which comprises (1) oxidizing antimony trioxide with aqueous nitric acid in presence of hydrochloric acid to provide pentavalent antimony oxide and hydroxide or mixed trivalent and pentavalent antimony oxides and hydroxides, (2) adding the oxides and hydroxides to an excess of the polyhydroxy compound and heating to cause the components to react while simultaneously distilling under reduced pressure to remove water of reaction, and optionally (3) removing the bulk of the excess unreacted polyhydroxy compound by continued distillation to form a slurry of the ester or mixed esters in the remaining polyhydroxy compound, and either recovering the crystallized pentavalent antimony ester or dissolving the slurry in another polar organic solvent. The solutions are used to incorporate antimony into organic polymers to provide flame resistance.

3,676,477

ESTERS OF PENTAVALENT AND TRIVALENT ANTIMONY WITH A POLYHYDROXY COMPOUND AND THE PROCESS FOR MAKING THE SAME

Dong M. Chay; Charles Carmen Cumbo; Michael J. Randolph, and Paul C. Yates, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1970, Ser. No. 93,834
Int. Cl. C07f 9/90
U.S. Cl. 260—446 26 Claims

Esters of pentavalent antimony (Sb^{+5}) with polyhydroxy compounds having vicinal hydroxyl groups, and mixed esters composed of these pentavelent antimony esters in combination with trivalent antimony (Sb^{+3}) esters of polyhydroxy compounds having vicinal hydroxyl groups, which can be made by a process involving reacting antimony trioxide (Sb_2O_3) with a polyhydroxy compound having vicinal hydroxyl groups and hydrogen peroxide to oxidize at least a portion of the antimony to the pentavalent state. By removing substantially all of the water of reaction there can be produced a pentavalent antimony ester in which four of the valences of the antimony are satisfied by ester linkages through the hydroxyl groups of two molecules of the polyhydroxy compound and the fifth valence of the antimony is satisfied by an ester linkage through a vicinal hydroxyl group of a third molecule of the polyhydroxy compound. The products of the invention are soluble in polar organic solvents customarily used in processing organic polymers and can therefore be conveniently incorporated into polymers to provide increased flame resistance.

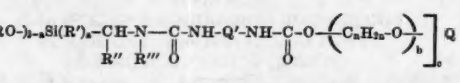
3,676,478

SILYL-SUBSTITUTED UREA DERIVATIVES

Hans Dietrich Golitz, Koeln-Stammheim; Eberhart Degener, Leverkusen; Gunter Oertel, Cologne-Flittard, all of Germany; Hans-Georg Schmelzer, New Martinsville, W. Va., and Walter Simmler, Odenthal-Schlinghofen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

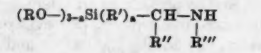
Filed Nov. 26, 1969, Ser. No. 880,430
Claims priority, application Germany, Dec. 4, 1968, P 18 12 562.7
Int. Cl. C07f 7/18
U.S. Cl. 260—448.2 N 6 Claims

New organosilyl- and carbamate-modified urea derivatives have the formula

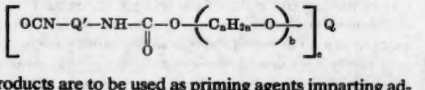


in which R and R′ are monovalent hydrocarbon radicals, R″ and R‴ are hydrogen atoms or monovalent hydrocarbon radicals, Q′ is a bivalent hydrocarbon radical, Q is a monovalent to hexavalent hydrocarbon radical, *a* is 0, 1, 2 or 3, *n* is 2, 3 or 4, *b* is zero or an integer from 1 to 200, and *c* is the valency number of Q.

These urea derivatives are prepared by reacting at a temperature of from −20° to 150° C an aminoalkyl-silane derivative of the formula



with an isocyanate-modified carbamic acid ester of the formula



The products are to be used as priming agents imparting adhesion to synthetic resins on siliceous surfaces, as surfactants and as intermediates for organo-polysiloxane resins.

3,676,479

METHOD OF MANUFACTURING ALLYL N,N-DIALKYLTHIOLCARBAMATES

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 625,603, March 4, 1967, Pat. No. 3,510,290. This application Nov. 10, 1969, Ser. No. 875,581
Int. Cl. C07c 155/08
U.S. Cl. 260—455 A 2 Claims

Allyl N,N-disubstituted thiocarbamates are manufactured by reacting a secondary amine with carbon disulfide and epichlorohydrin to yield a 2,3-epithiopropyl thiocarbamate, followed by desulfurization by heating or reaction with a desulfurizing reagent. The products are useful as pre-emergent herbicides.

3,676,480

α-ACYLHYDRAZINO-β-PHENYL-PROPIONITRILES

Meyer Sletzinger, North Plainfield; Sandor Karady, Elizabeth; Manuel G. Ly, New Brunswick, and Seemon H. Pines, Murray Hill, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 24, 1970, Ser. No. 13,770
Int. Cl. C07c 101/72, 103/38
U.S. Cl. 260—465 D 4 Claims

L-α-acylhydrazino-β-phenyl-propionitrile compounds useful as intermediates in the production of L-α-hydrazino-β-phenyl-propionic acids. Also included are processes for preparing the compounds of this invention by aminating L-α-acylamido-β-phenyl-propionitrile and processes for hydrolyzing the compounds of this invention to form L-α-hydrazino-β-phenyl-propionic acid compounds.

3,676,481

CATALYTIC ISOMERIZATION OF 2-METHYL-3-BUTENENITRILE TO LINEAR PENTENENITRILES IN THE PRESENCE OF CERTAIN METAL SALT AND/OR TRI(HYDROCARBYL)BORON PROMOTERS

Yuan-Tsan Chia, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 758,578, Sept. 9, 1968, abandoned, which is a continuation-in-part of Ser. No. 678,216, Oct. 26, 1967, abandoned. This application June 29, 1970, Ser. No. 50,907
Int. Cl. C07c 121/30
U.S. Cl. 260—465.9 27 Claims

The present invention discloses the isomerization of 2-methyl-3-butenenitrile to linear pentenenitriles in high yield by means of catalysts which comprise zero-valent nickel complexes promoted by certain metal salt and/or tri(hydrocarbyl)-boron promoters at temperatures in the range 10°–200° C. The linear pentenenitrile product, principally 3-pentenenitrile, is useful as an intermediate to adiponitrile.

3,676,482

RACEMIZATION OF AN ALPHA-METHYL DOPA DERIVATIVE

David F. Hinkley, Plainfield, and Robert L. Ellsworth, Basking Ridge, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 502,355, Oct. 22, 1965, abandoned. This application March 14, 1969, Ser. No. 839,739
Int. Cl. C07c 103/22
U.S. Cl. 260—471 H 1 Claim

A process for racemizing an optically active isomer of an amidoester in a lower alkanol by the use of ammonia which causes trace equilibration.

3,676,483

DISPERSANTS PREPARED FROM POLYAMINES AND ALKARYL CARBOXYLIC ACIDS

Shih-En Hu, Westfield, N.J., assignor to Esso Research and Engineering Company

Continuation-in-part of Ser. No. 706,683, Feb. 19, 1968, Pat. No. 3,526,661, which is a continuation-in-part of Ser. No. 354,756, March 25, 1964, abandoned. This application Nov. 28, 1969, Ser. No. 880,952. The portion of the term of this patent subsequent to Feb. 28, 1984, has been disclaimed.

Int. Cl. C07c *69/54*

U.S. Cl. 260—475 N 11 Claims

An oil-soluble additive useful for improving the properties of a fuel oil, a lubricating oil, a heating oil, a gasoline or the like is prepared by heating an aliphatic polyamine or amino alcohol with an alkylated aryl carboxylic acid at a temperature that causes the splitting out of water. The carboxylic acid is prepared by thermal diene addition of an alkylated aromatic hydrocarbon such as paraffin-wax-alkylated naphthalene, or of a ring-substituted hydroxy, amino, or vinyl derivative of such hydrocarbon, with an unsaturated monobasic acid, or with an unsaturated polybasic acid or its anhydride, such as maleic acid, maleic anhydride, acrylic acid, methacrylic acid, or the like. The additive can be modified by treatment with phosphorous acid.

3,676,484

SYNTHESIS OF HYDROXYALKYL ESTERS OF CARBOXYLIC ACIDS

Jack G. Scruggs, and Donnie G. Brady, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Feb. 10, 1970, Ser. No. 10,273

Int. Cl. C07c *67/00*

U.S. Cl. 260—475 P 12 Claims

Preparation of esters by reaction of halocarbinols with alkali metal carboxylates using phosphonium salts as catalysts to avoid otherwise undesired side reactions, such as polymerization, while providing effective yields of the desired esters.

3,676,485

METHOD FOR USE IN A CONTINUOUS FLOW REACTION FOR PRODUCING A MONOMER AND OR A PROTOPOLYMER

Alan E. Lewis, and Frederick W. Voight, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1968, Ser. No. 752,058

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 P 10 Claims

Method by which an esterification precursor is continuously converted to an esterification reaction product liquid by admixing a feed stream of the precursor into and with a circulating stream of the product liquid, heating the admixture to vaporize a low-boiling component, the heating being at a sufficient temperature and for a sufficient time to convert the precursor to the product liquid, maintaining circulation of the admixture by separating the low-boiling component therefrom, thereby establishing a flow of liquid from a more dense zone to a less dense zone in the circulating liquid stream, and continuously withdrawing a stream of the product liquid from the circulating admixture. The method further includes converting the precursor to a protopolymeric liquid having substantially uniformly suspended therein particulate solid matter.

3,676,486

AMINOPHENYLCARBAMATES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

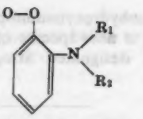
Filed Oct. 20, 1969, Ser. No. 867,862

Claims priority, application Switzerland, Oct. 25, 1968, 16003/68; Oct. 31, 1968, 16212/68

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C 10 Claims

New aminophenylcarbamates of the formula



wherein R_1 represents an alkyl residue containing not more than three carbon atoms and R_2 an alkyl residue containing two to four carbon atoms, have very good properties in combating insects and members of the order Acarina, but they possess especially outstanding properties in destroying blood-sucking arthropodes. These carbamates may be used as active ingredients in pesticidal preparations.

3,676,487

ISOMERIZATION OF 2-HYDROXY P-METHANE 1-CARBOXYLATE AND 2-HYDROXY-8-P-MENTHENE-1-CARBOXYLATE TO THE CORRESPONDING 1-HYDROXY-2-CARBOXYLATE COUNTERPART

Wilbur Gary, Jacksonville, Fla., assignor to SCM Corporation, Cleveland, Ohio

Filed May 20, 1971, Ser. No. 145,496

Int. Cl. C07c *67/00*

U.S. Cl. 260—489 7 Claims

The isomerization of 2-hydroxy-1-carboxylates of 8-p-menthene and p-menthane to the 1-hydroxy-2-carboxylates is accomplished by heating the reactants to a temperature of between about 30° C. to 180° C. for a time sufficient to effect substantial isomerization.

3,676,488

PROCESS FOR PREPARING PHENYL SULFONE CARBOXYLIC ACIDS

Anatoli Onopchenko, Monroeville; Johann G. D. Schulz, Pittsburgh, and Roger C. Williamson, Allison Park, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 1, 1970, Ser. No. 33,946

Int. Cl. C07c *63/02*, *147/06*

U.S. Cl. 260—524 R 10 Claims

A process for preparing phenyl sulfone carboxylic acids which involves contacting an alkyl phenyl sulfone with molecular oxygen while the same is dissolved in a lower carboxylic acid containing cobalt and a methylenic ketone.

3,676,489

PROCESS FOR PRODUCING ORGANIC ACIDS

Alan F. Ellis, Murrysville; Alfred N. Kresge, Verona, and Richard Seekircher, Cheswick, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 28, 1969, Ser. No. 880,890

Int. Cl. C07c *51/32*

U.S. Cl. 260—533 R 9 Claims

An improvement in a process for converting an unsaturated, acyclic hydrocarbon to an acid in which the unsaturated, acyclic hydrocarbon is reacted with oxygen containing a small amount of ozone at a low temperature to obtain an intermediate product in a first stage and the intermediate product is oxidized in a second stage with molecular oxygen at a higher temperature to obtain the desired carboxylic acid, which involves heating the intermediate product in the absence of additional oxygen prior to the second stage oxidation, whereby explosive hazards in the second stage are minimized.

3,676,490

NEW ANTIBIOTIC

Josef Thiemann; Yelahanka K. S. Murthy, both of Como, and Carolina Coronelli, Milan, all of Italy, assignors to Lepetit S.P.A., Milan Italy

Filed July 9, 1965, Ser. No. 470,884

Claims priority, application Great Britain, July 29, 1964, 30,116/64

Int. Cl. C07c *101/30*; A61k *21/00*

U.S. Cl. 260—534 6 Claims

The invention is concerned with a new antibiotic, named alanosine, whose chemical structure corresponds to L-(-)-2-

amino-3-nitrosohydroxylamino-propionic acid. It is obtained by cultivating a new species of Actinomyces of the genus Streptomyces, designated Streptomyces alanosinicus n.sp. ATCC 15710.

3,676,491

PROCESS FOR PREPARING TRIFLUOROACETIC ANHYDRIDE

Hiroyuki Wada, Suita-shi, and Heikitsu Sonoyama, Setsu-shi, both of Japan, assignors to Daikin Kogyo Co., Ltd.

Filed June 9, 1969, Ser. No. 831,758
Claims priority, application Japan, June 18, 1968, 44/42103
Int. Cl. C07c *51/54*
U.S. Cl. 260—546 **16 Claims**

A process for preparing trifluoroacetic anhydride which comprises the steps of reacting trifluoroacetyl chloride with a metal oxide (e.g. zinc oxide, copper oxide, cadmium oxide) at a temperature from 40° to 100° C. The reaction may be carried out in an inert solvent.

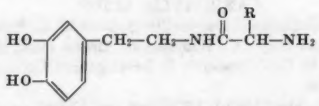
3,676,492

AMINO ACID AMIDES OF DISUBSTITUTED PHENETHYLAMINES

John Hans Biel, Lake Bluff, Ill., and Irwin L. Klundt, Brookfield, Wis., assignors to Aldrich Chemical Company

Filed Dec. 9, 1970, Ser. No. 96,615
Int. Cl. C07c *103/38*
U.S. Cl. 260—559 A **6 Claims**

Amino acid amides of disubstituted phenethylamines represented by the formula:



wherein R is hydrogen, lower alkyl, hydroxymethyl, hydroxybenzyl, β-hydroxyethyl, mercaptomethyl, methylmercaptoethyl, 3-indolylmethyl, carboxymethyl, β-carboxyethyl, γ-quanidinopropyl, Δ-aminobutyl, or 5-imidazolylmethyl; and the pharmaceutically acceptable acid addition salts thereof. The compounds are useful as renal vasodilators and antihypertensive agents.

3,676,493

ALKANOLAMINE DERIVATIVES

Leslie Harold Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 3, 1969, Ser. No. 839,810
Claims priority, application Great Britain, July 18, 1968, 34,255/68
Int. Cl. C07c *103/30*
U.S. Cl. 260—559 A **14 Claims**

The disclosure relates to 1-amino-3-(carbamoylphenoxy)-2-propanol derivatives, processes for their manufacture, pharmaceutical compositions containing them and a method of using them to produce cardiac β-adrenergic blockade in warm-blooded animals. Representative of the compounds disclosed is 3-(2-chloro-4-n-hexylcarbamoylphenoxy)-1-t-butylamino-2-propanol.

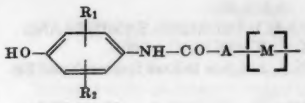
3,676,494

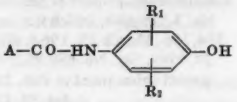
CARBOXYLIC ACID AMIDES

Hans Rudolf Biland, Gelterkinden, and Max Duennenberger, Frenkendorf, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Dec. 4, 1969, Ser. No. 882,302
Claims priority, application Switzerland, Dec. 13, 1968, 18664/68
Int. Cl. C07c *103/22*
U.S. Cl. 260—559 T **4 Claims**

The invention concerns new carboxylic acid amides of the formula





wherein M denotes a divalent bridge member of the series —S—, —S—A—S— and —S—CH_2CH_2—(O—CH_2—CH_2)$_p$—S—, A denotes an alkylene residue containing one to 18 carbon atoms, *p* denotes an integer from one to three, R_1 denotes an alkyl group and R_2 denotes alkyl or hydrogen.

These compounds are valuable antioxidants for polymers which are damaged by oxidative attacks.

3,676,495

2,4-BIS(4-AMINOCYCLOHEXYLMETHYL)CYCLOHEXYLAMINE

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 741,847, July 2, 1968, Pat. No. 3,557,180. This application Sept. 16, 1970, Ser. No. 72,811
Int. Cl. C07c *87/42*
U.S. Cl. 260—563 R **1 Claim**

The triamine 2,4-bis(aminocyclohexylmethyl)cyclohexylamine is prepared by hydrogenation of 2,4-bis(p-aminobenzyl)aniline. The hydrogenated triamine is an intermediate for preparing the corresponding triisocyanate, which in-turn is useful in the preparation of polyurethane materials.

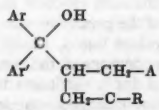
3,676,496

3-ALKOXY-OR 3-ARYLOXY-2-(DIARYL-HYDROXY)-METHYL-PROPYLAMINES

Roland Yves Mauvernay, Riom; Norbert Busch, Loubeyrat; Jacques Simond, Chamalieres, and Jacques Moleyre, Mozac, all of France, assignors to Centre Europeen De Recherches Mauvernay C.E.R.M.

Filed Jan. 2, 1970, Ser. No. 447
Claims priority, application Great Britain, Jan. 3, 1969, 452/69
Int. Cl. C07c *93/04*
U.S. Cl. 260—570 R **2 Claims**

A 3-alkoxy- or 3-aryloxy-2-(diaryl-hydroxy)-methyl-propylamine of the formula



in which Ar and Ar′, which may be the same or different, are unsubstituted or substituted aryl groups, R is an aliphatic, aryl or arylaliphatic group, and A is a secondary or tertiary amino group, or an acid addition salt thereof. The compound has coronarodilating properties and central nervous system activity.

3,676,497

PROCESS FOR PREPARING DI(AMINOPHENYL)-METHANES

Frank P. Recchia, New Haven, and Henri Ulrich, North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 6, 1968, Ser. No. 750,454
Int. Cl. C07c *85/08*
U.S. Cl. 260—570 D **10 Claims**

Di(aminophenyl)methane having a high proportion of the o,p′-isomer (10 to 60 percent) and a substantial proportion of

the o,o'-isomer (5 to 25 percent) is obtained by reacting at least 3.5 moles of aniline with 1 mole of formaldehyde, separating the water of condensation from the resulting mixture of aniline and anilino-acetal, heating the anhydrous mixture to 125° C. to 205° C. and adding a proton source (aniline hydrochloride preferred). The mixture of di(aminophenyl)-methane isomers can be separated from the mixture of polyamines so obtained and phosgenated to give a mixture of the corresponding isomeric di(isocyanatophenyl)methanes which mixture is a storage stable liquid. Alternatively the mixture of polyamines can be phosgenated, without separation of the di(aminophenyl)-methane, to give the corresponding mixture of polymethylene polyphenyl polyisocyanates. The latter mixture gives polyurethane foams of much lighter color than those obtained using comparable mixtures produced by prior art procedures.

3,676,498
1,6-BIS(2-OXACYCLOHEXYL)-HEXANE-1,6-DIONES AND A PROCESS FOR PRODUCING THEM

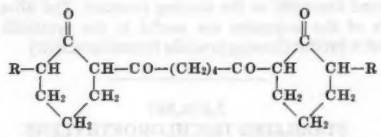
Stephen Blake, Fullwood, Preston, England, assignor to Pennwalt Corporation

Division of Ser. No. 527,474, Feb. 15, 1966, Pat. No. 3,441,605. This application Jan. 14, 1969, Ser. No. 801,909

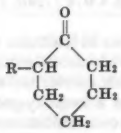
Int. Cl. C07c *49/36*, *48/00*

U.S. Cl. 260—586 R **6 Claims**

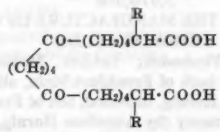
A tetraketone of the formula



wherein the groups R are the same and each is H or CH_3, is produced by a process which comprises reacting adipoyl dichloride with at least a 100 percent excess over the stoichiometric proportion of an enamine of a cyclohexanone, the cyclohexanone having the formula



The tetraketone can be hydrolyzed to form a diketo-dicarboxylic acid of the formula



which is useful as a cross-linking agent for polymers.

3,676,499
PROCESS OF PREPARING PHYTONE

Joseph Redel, Antony, and Jean Baptiste Christian Boch, Nerís Les Bains, both of France, assignors to A.E.C. Societe de Chimie Organique et Biologique, Commentry, France

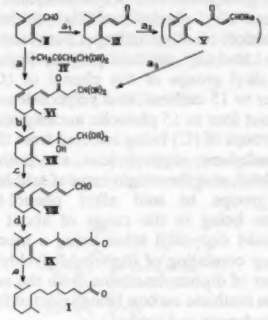
Continuation-in-part of Ser. No. 482,681, Aug. 26, 1965, abandoned. This application Oct. 31, 1968, Ser. No. 772,285

Claims priority, application France, Sept. 3, 1964, 64986944

Int. Cl. C07c *49/20*, *49/06*

U.S. Cl. 260—593 R **2 Claims**

Phytone is prepared from citral or pseudo-ionone by conversion thereof into a C_{14}-pseudo-acetal or 7,11-dimethyl-4,6,10-dodecatriene-1,1-lower-dialkyoxy-3-one, reaction of this acetal with a methylmagnesium halide to a C_{18}-pseudo-



hydroxy-acetal, hydrolysis of the latter into the corresponding aldehyde which is condensed with acetone to the C_{18}-pseudo-ketone, and catalystic hydrogenation of the latter.

3,676,500
TERTIARY ALDEHYDE COMPOUNDS

Gerald J. Mantell, Allentwon, Pa., and Christian S. Rondestvedt, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 432,399, Feb. 12, 1965, which is a continuation-in-part of Ser. No. 65,259, Oct. 27, 1960, abandoned. This application Jan. 26, 1967, Ser. No. 611,817

Int. Cl. C07c *47/18*

U.S. Cl. 260—602 **1 Claim**

As novel compositions of matter, β-alkoxy alde-hydes, such as β-isobutoxypivaladehyde, which, being like most aldehydes, are odoriferous compounds useable as aids in the composition of perfumes. The novel β-alkoxy aldehydes are also useful intermediates in the preparation of useful alcohols, carboxy acids, carboxy amides, etc. The novel β-alkoxy aldehydes of the invention are prepared by the unique vapor phase isomerization of meta-dioxanes catalyzed by weakly acidic surfaces such as pumice and silica gel.

3,676,501
PRODUCTS OF REACTION OF POLYOXYALKYLENE ALCOHOLS AND DI-GLYCIDYL ETHERS OF BISPHENOL COMPOUNDS

Virgil L. Seale; Billy Ray Moreland, and James Derwin De Shazo, all of Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Continuation of Ser. Nos. 707,931, Feb. 26, 1968, abandoned, and Ser. No. , , which is a division of Ser. No. 523,971, Feb. 1, 1966, Pat. No. 3,383,325, which is a continuation-in-part of Ser. No. 350,112, March 6, 1964, Pat. No. 3,383,326. This application March 23, 1970, Ser. No. 20,452

Int. Cl. C07c *43/22*

U.S. Cl. 260—613 B **5 Claims**

Compositions of matter, and breaking water-in-oil petroleum emulsions therewith, which compositions comprise a substantially water-insoluble, at least partially oil-soluble product formed by the reaction of (A) a polyoxyalkylene alcohol in which the oxyalkylene groups consist essentially of a member from the group consisting of oxypropylene, oxybutylene, and both oxypropylene and oxybutylene, with at least one terminal 2-hydroxyethyl group and (B) a diglycidyl ether of a bisphenol compound in which about 60 to 90 percent of said

diglycidyl ether groups are reacted with the hydroxyl groups of said polyoxyalkylene glycol with the formation of ether linkages between the polyoxyalkylene glycol nuclei and the bis-phenol compound nuclei, the remaining, unreacted glycidyl ether groups of the resultant product being reacted with hydroxyl groups on (C) polyoxyalkylene groups of a polyoxyalkylated alkyl phenol-formaldehyde polycondensate with the formation of ether linkages between said reaction product of (A) and (B) and said polyoxyalkylated polycondensate, the alkyl groups of the phenol of (C) having an average of four to 15 carbons, said polycondensate having an average of about four to 15 phenolic nuclei per molecule, the oxyalkylene groups of (C) being selected from the group consisting of oxyethylene, oxypropylene, and both oxyethylene and oxypropylene, and the weight ratio of said last-mentioned oxyalkylene groups to said alkyl phenol-formaldehyde polycondensate being in the range of about 1:5 to 15:1, respectively, said diglycidyl ether being a member selected from the group consisting of diphenyldiglycidyl ether and a diglycidyl ether of diphenylmethane, with the remaining substituents on the methane carbon being selected from the group consisting of hydrogen and methyl.

3,676,502

BENZ <a> ANTHRACENE STEROID ANALOGUE

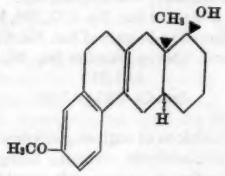
Colin G. Pitt, Durham, N.C., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 5, 1970, Ser. No. 78,149

Int. Cl. C07c *43/20*

U.S. Cl. 260—613 R **1 Claim**

A benz <a> anthracene of the formula:



synthesized from 5β-hydroxy-10β-methyl-trans-2-decalone.

3,676,503

PROCESS FOR PREPARING HYDROQUINONES

William Von E. Doering, Cambridge, Mass.; William J. Farrissey, Jr., Northford, and Floro F. Frulla, Wallingford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed April 16, 1970, Ser. No. 29,280

Int. Cl. C07c *39/02*

U.S. Cl. 260—621 H **6 Claims**

A one-step reductive hydrolytic method for preparing hydroquinone from p-nitrosophenol is disclosed.

Good yields of hydroquinone are obtained by heating p-nitrosophenol in a hydrogen atmosphere between 60° C – 150° C with a hydrogenation catalyst in an acid medium in the presence of an inert solvent.

3,676,504

PREPARATION OF A TEREPENE ALCOHOL

John C. Leffingwell, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Division of Ser. No. 711,500, March 8, 1968, Pat. No. 3,609,197. This application Sept. 10, 1970, Ser. No. 71,241

Int. Cl. C07c *35/18*; C11b *9/00*

U.S. Cl. 260—631.5 **1 Claim**

Synthesis of terpinene-4-ol from terpinolene.

3,676,505

4-(4-METHYLCYCLOHEX-3-EN-1-YL)PENT-4-EN-1-OL AND A PROCESS FOR ITS SYNTHESIS

Robert J. Crawford, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 29, 1969, Ser. No. 888,891

Int. Cl. C07c *35/00*

U.S. Cl. 260—631.5 **1 Claim**

Disclosed herein is the synthesis of 4-(4-methylcyclohex-3-en-1-yl)pent-4-en-1-ol, a novel compound useful as a starting reagent for the production of lanceol and lanceal, known perfume materials. Limonene is first metalated and then reacted with ethylene oxide to give the novel compound. This compound can then be converted to a known aldehyde which can be used to produce lanceol and lanceal by known processes.

3,676,506

SYNTHESIS OF NOVEL COMPOUNDS USEFUL FOR PRODUCTION OF JUVABIONE

Robert J. Crawford, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 29, 1969, Ser. No. 888,894

Int. Cl. C07c *35/00*

U.S. Cl. 260—631.5 **1 Claim**

Disclosed herein are processes for the production of 6-methyl-2-(4-methylcyclohex-3-en-1-yl)hept-1-en-4-ol and 2-methyl-6-(4-methylcyclohex-3-en-1-yl)heptan-4-ol using metalated limonene as the starting reactant. The novel compounds of the invention are useful in the synthesis of juvabione, a product having juvenile hormone activity.

3,676,507

STABILIZED TRICHLOROETHYLENE

Alastair Campbell, and Peter Robinson, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 20, 1970, Ser. No. 13,203

Claims priority, application Great Britain, March 24, 1969, 15,306/69

Int. Cl. C07c *17/40, 17/42*

U.S. Cl. 260—652.5 R **3 Claims**

A phenol which carries at least one substituent in an ortho position with respect to a hydroxy-group and phenol itself or a substituted phenol which carries no substituent in an ortho position with respect to a hydroxy-group are used as synergistically co-operative inhibitors of oxidation of trichloroethylene.

3,676,508

PROCESS FOR THE MANUFACTURE OF CARBON TETRACHLORIDE

Hans Krekeler, Wiesbaden; Helmut Meidert; Wilhelm Riemenschneider, both of Frankfurt/Main, all of Germany, and Lothar Heinz Hornig, deceased, late of Frankfurt/Main-Schwanheim, Germany (by Anneliese Hornig, nee Munich, co-heiress), assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Main, Germany

Filed Jan. 21, 1970, Ser. No. 4,748

Claims priority, application Germany, Jan. 30, 1969, P 19 04 426.9

Int. Cl. C07c *19/06*

U.S. Cl. 260—664 **2 Claims**

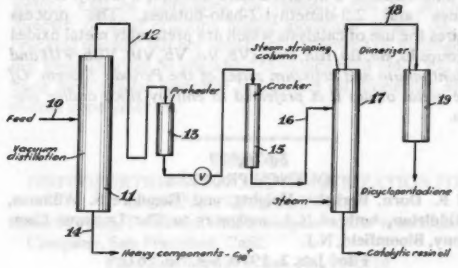
In the process for the manufacture of carbon tetrachloride from benzene, mixtures of benzene and chlorinated aliphatic or aromatic compounds, or chlorinated aromatic compounds, with chlorine in an excess amount of up to 300 percent, in the absence of catalysts in the gaseous phase in two reaction stages at a temperature in the first stage of from 6° to 400° C. and in the second stage of from 400° to 800° C. the space-time-yield is considerably increased by operating in both reac-

tion stages under a pressure in the range of from 200 to 700 atmospheres. The reaction is carried out in a corrosion resistant reactor in continuous manner using 0.2 to 4 moles of organic compound or compounds per liter of reaction space per second.

3,676,509
RECOVERY OF DICYCLOPENTADIENE FROM CRACKED PETROLEUM

John C. Heiman, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 20, 1971, Ser. No. 107,974
Int. Cl. C07c *13/00*
U.S. Cl. 260—666 PY 5 Claims



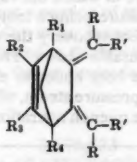
A process for recovering purified dicyclopentadiene from a C_6^+ by-product stream by separating the dicyclopentadiene-containing stream, cracking the dicyclopentadiene contained therein to cyclopentadiene, separating the cyclopentadiene from the other components and dimerizing the cyclopentadiene to a purified dicyclopentadiene.

3,676,510
POLYENE HYDROCARBONS AND PROCESS FOR OBTAINING SAME

Sergio Arrighetti, Milan; Eugenio Vajna, and Sebastiano Cesca, both of San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Jan. 22, 1971, Ser. No. 109,007
Claims priority, application Italy, Jan. 22, 1970, 19658
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY 3 Claims

Triene hydrocarbons containing two conjugated double bonds, represented by the formula:



wherein R_1, R_2, R_3, R_4, R and R′ may be hydrogen, alkyl or aryl radicals, and which may be prepared through a Diels-Alder reaction between a cyclopentadiene and (a) a dihalide-alkenyl compound, followed by dehydrohalogenation with basic agents, or (b) esters of fumaric or maleic acid, followed by reaction with a Grignard's reagent and then by dehydration of the alcohol, are disclosed.

3,676,511
POLYENE HYDROCARBONS CONTAINING TWO CONJUGATED DOUBLE BONDS AND PROCESS FOR OBTAINING SAME

Sergio Arrighetti, Milan; Eugenio Vajna, and Sebastiano Cesca, both of San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Jan. 22, 1971, Ser. No. 109,009
Claims priority, application Italy, Jan. 22, 1970, 19660 A/70
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY 4 Claims

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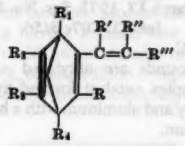
There are provided novel polyene hydrocarbons containing two conjugated double bonds and having the following general formula



wherein R is hydrogen or alkyl and R_1, R_2, R_3, R_4, R′, R″ and R‴ are hydrogen, alkyl or aryl.

3,676,512
POLYENE HYDROCARBONS CONTAINING AT LEAST TWO CONJUGATED DOUBLE BONDS AND PROCESS FOR OBTAINING SAME

Sergio Arrighetti, Milan; Eugenio Vajna, and Sebastiano Cesca, both of San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Jan. 22, 1971, Ser. No. 109,034
Claims priority, application Italy, Jan. 22, 1970, 19654 A/70; Jan. 22, 1970, 19656 A/70
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY 9 Claims

There are provided novel triene hydrocarbons, having at least two conjugated double bonds, and being of the general formula

$$A-(C(R_o)_2)_n-(CH)_m=B$$

in which A is a radical consisting of a ring containing an endomethylene group; B may be both a linear alkadiene radical and a substituted and unsubstituted alkene or cycloalkene radical; R_o may be hydrogen, an aryl or an alkyl radical, n is a number ranging from 0 to 3; and m is 0 or 1. If *n* is not 0, m is 0; if *n* is 0, *m* is 0 or 1.

3,676,513
HYDROCARBON DEHYDROGENATION EMPLOYING METAL ANTIMONIDE CATALYSTS

Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 8, 1971, Ser. No. 105,110
Int. Cl. C07c *5/18*
U.S. Cl. 260—668 D 9 Claims

Antimonides of cobalt and nickel are employed for dehydrogenating naphthenes and olefins.

3,676,514
PROCESS FOR ADDING METHYL SUBSTITUENTS TO AROMATIC HYDROCARBONS

Robert W. Rosenthal, Pittsburgh, Pa., assignor to Gulf Rsearch & Development Company, Pittsburgh, Pa.

Filed Sept. 5, 1959, Ser. No. 855,781
Int. Cl. C07c *15/02*
U.S. Cl. 260—668 6 Claims

A process for adding from one to two methyl substituents to an aromatic hydrocarbon which involves reacting the aro-

matic hydrocarbon with formaldehyde in an aqueous HCl medium in an atmosphere containing gaseous HCl at an elevated pressure to obtain a chloromethyl aromatic hydrocarbon, reacting the chloromethyl aromatic hydrocarbon with hydrogen in the presence of a hydrogenation catalyst and gaseous HCl at an elevated pressure to obtain the desired methyl aromatic hydrocarbon, hydrogen and gaseous HCl and recycling the latter hydrogen and gaseous HCl to the first stage of the process.

3,676,515

PROCESS FOR ALKYLATION OF AROMATIC COMPOUNDS

Richard K. McLeod, Dickerson, Tex., assignor to Monsanto Company, St. Louis, Mo

Filed March 17, 1971, Ser. No. 125,386
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 C **15 Claims**

Aromatic compounds are alkylated with olefins in the presence of a complex catalyst formed by reacting an alloy comprising mercury and aluminum with a hydrogen halide in a hydrocarbon medium.

3,676,516

PURIFICATION OF ETHYLENE OR PROPYLENE STREAMS CONTAINING CARBON MONOXIDE

Donald M. Haskell, and Bradley L. Munro, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed May 18, 1970, Ser. No. 38,524
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 A **11 Claims**

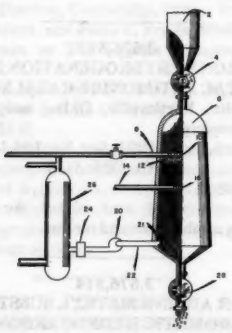
A propylene or ethylene stream containing small quantities of carbon monoxide is contacted with a supported copper oxide catalyst wherein 20 to 95 weight percent of the copper is in the cupric state and the remainder is in a lower valence state. The catalyst is advantageously prepared by treating an oxidized copper oxide catalyst with carbon monoxide or hydrogen.

3,676,517

PROCESS FOR THE PRODUCTION OF SYNTHESIS GAS, CRACKED HYDROCARBON AND CALCINED COKE

La Vaun S. Merrill, Jr., Englewood, and Robert E. Schilson, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 12, 1969, Ser. No. 857,517
Int. Cl. C07c *11/24*
U.S. Cl. 260—679 R **8 Claims**



Synthesis gases, cracked hydrocarbons, and calcined coke are produced in a calciner wherein hot combustion gases are passed through the hot coke, hydrocarbons and/or steam are injected into the calciner at a point below the combustion zone but into the soaking area, and the products are drawn out of the soaking area and recovered.

3,676,518

PREPARATION OF DIOLEFINS FROM TERTIARY AND SECONDARY ALKYL HALIDES CONTAINING ONLY FOUR CARBON ATOMS IN THE MAIN CHAIN

Frederic H. Hoppstock; Louis A. Falvo, both of Akron, and Kenneth J. Frech, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 17, 1969, Ser. No. 867,395
Int. Cl. C07c *1/30*
U.S. Cl. 260—680 R **4 Claims**

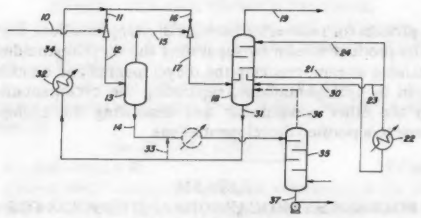
There is disclosed a method for the preparation of certain diolefins such as 1,3-butadiene, isoprene and 2,3-dimethyl-1,3-butadiene which comprises simultaneously dehydrohalogenating and dehydrogenating alkyl halides such as 2-halo-butanes, 2-methyl-2-halo-butanes, 3-methyl-2-halo-butanes and 2,3-dimethyl-2-halo-butanes. The process requires the use of catalysts which are preferably metal oxides of groups *Ib*, *IIa*, *IIb*, *IIIa*, *IVa*, *IVb*, *Va*, *Vb*, *VIb*, *VIIb*, *VIII and the lanthanum and actinium series of the Periodic System. Of these metal oxides it is preferred to employ silica and/or alumina.*

3,676,519

QUENCH PROCESS

Rolf K. Dorn, Berkeley Heights, and Theodore S. Williams, Middleton, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jan. 2, 1970, Ser. No. 261
Int. Cl. C07c *11/24*
U.S. Cl. 260—683 **1 Claim**



A quench process wherein an effluent from a high temperature process, such as, the pyrolysis of hydrocarbons, is contacted with a hydrocarbon quench oil having upper and lower cut points somewhere within the range between 500° and 1,000° F. (converted to one atmosphere) to rapidly cool the effluent to a temperature at which side reactions are minimized, the quench oil being partially vaporized as a result of such contacting. A mixture of the effluent and vaporized quench oil is then contacted with a quench oil having cut points within the above described range to effect cooling thereof to a temperature at which the vaporized quench oil is condensed, the temperature being a temperature no less than 400° F. in order to effect recovery thereof at a temperature sufficient to generate usable steam. The quench oil is then passed through a waste heat boiler to effect cooling thereof and generation of high pressure steam, with the cooled quench oil being recycled to the quench operation.

3,676,520

CONVERSION OF OLEFINS

Louis F. Heckelsberg, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 31, 1964, Ser. No. 422,550
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **11 Claims**

Olefin hydrocarbons are disproportionated by contacting with a catalyst comprising an oxide of rhenium.

3,676,521

SYNTHETIC LUBRICANTS FROM LOW MOLECULAR WEIGHT OLEFINS

Richard S. Stearns, Malvern; Irl N. Duling, West Chester, and David S. Gates, Swarthmore, all of Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 621,443, March 8, 1967, abandoned. This application Oct. 5, 1970, Ser. No. 78,191

Int. Cl. C07c 3/10, 3/26; C10m 3/12

U.S. Cl. 260—683.1 6 Claims

New ethylene-propylene copolymer oils containing 29–71 mol percent ethylene, the rest being at least substantially entirely propylene, said oils being of high viscosity index, low pour point, and high stability, are produced from monoolefin mixtures containing ethylene and propylene employing specified vanadium-aluminum or titanium-aluminum Ziegler-type catalyst systems. Hydrogen under pressure is used with the vanadium-aluminum catalyst system to control molecular weight. Oils of lubricating oil viscosity can be produced directly, or after cracking higher molecular weight oil, said cracking usually, but not necessarily, followed by hydrogenating. Dewaxing can be employed to reduce pour point. Oil fractions have similar desirable lubricating oil properties as the overall copolymer oil.

3,676,522

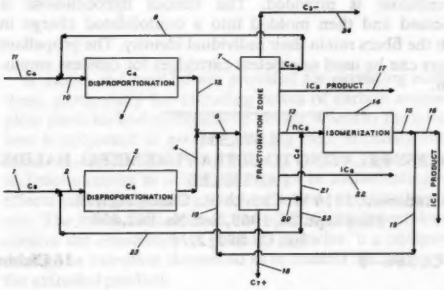
DISPROPORTIONATION AND ISOMERIZATION FOR ISOPENTANE PRODUCTION

Robert P. Sieg, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 18, 1971, Ser. No. 107,214

Int. Cl. C07c 5/24, 9/18

U.S. Cl. 260—683.65 8 Claims



A process for producing isopentane which comprises: (a) disproportionating a normal butane-rich fraction in a C_4 disproportionation zone to obtain C_3 and n-pentane; (b) disproportionating a normal hexane-rich fraction in a C_6 disproportionation zone to obtain n-pentane and C_7; (c) fractionating the C_3, nC_5 effluent and the nC_5, C_7 effluent to obtain nC_5; and (d) isomerizing at least a portion of the normal pentane from both steps (a) and (b) in an isomerization zone to obtain isopentane. It is preferred to further integrate the disproportionation zones with the isomerization zone using common fractionation facilities.

3,676,523

ALPHA-OLEFIN PRODUCTION

Ronald F. Mason, Mill Valley, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed July 16, 1971, Ser. No. 163,448

Int. Cl. C07c 3/10

U.S. Cl. 260—683.15D 10 Claims

Ethylene is oligomerized to linear, alpha-olefins by reacting ethylene in liquid phase solution in the presence of a catalyst composition produced by contacting in the presence of ethylene (1) a simple divalent nickel salt (2) a boron hydride reducing agent and (3) an o-dihydrocarbylphosphinobenzoic acid or alkali metal salt thereof.

3,676,524

VINYL ESTER RESINS PREPARED WITH AN ADDITION COMPOUND OF A SECONDARY AMINE-ACID SALT CATALYST

Elichiro Takiyama, Tokyo, and Sadakazu Hokamura, Yamato, both of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed July 27, 1970, Ser. No. 58,663

Int. Cl. C08g 45/04

U.S. Cl. 260—837 R 10 Claims

A process for producing unsaturated ester resins which can use an accelerator containing an organic acid and an organic salt of cobalt in their cure, the process comprising heat reacting an epoxy resin having at least one epoxy group in its molecular structure with an unsaturated monobasic acid in the presence, as catalyst, of an addition compound of a secondary amine and an acid of the group consisting of inorganic and organic acids.

3,676,525

HIGH MOLECULAR WEIGHT AROMATIC POLYAMIDES HAVING AN AFFINITY FOR BASIC DYES

Gerhard D. Wolf, Dormagen; Gunter Blankenstein, Stommeln, and Gunter Nischk, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 7, 1971, Ser. No. 132,170

Claims priority, application Germany, April 13, 1970, P 20 17 509.1

Int. Cl. C08g 41/04

U.S. Cl. 260—857 TW 3 Claims

A polyamide composition of matter that can be dyed with basic dyestuffs comprising a conventional high molecular weight aromatic polyamide and 3 to 30 percent by weight of an aromatic polyamide containing 30 – 100 Mol percent of removing structural units with disulfone imide structures.

3,676,526

POLYMERIC DISPERSION OF A DIENE-ACRYLONITRITE GRAFT COPOLYMER WITH A DIFFERENT GRAFT COPOLYMER

Eugene G. Sommerfeld, 1250 Providence Road, Apt. 91A, Secane, Pa.

Continuation-in-part of Ser. No. 643,049, June 2, 1967, abandoned. This application Feb. 2, 1970, Ser. No. 8,067

Int. Cl. C08d 9/08, 9/16

U.S. Cl. 260—876 R 6 Claims

A dispersion of two different types of graft copolymers in an organic liquid. One of the types has a polymeric diene backbone component and a nitrile graft component; the other type has an unsaturated polymer backbone component and a graft component which is a polymer of a graft copolymerizable vinyl monomer.

The dispersion is useful as a coating composition, particularly for coating cans.

3,676,527

PROCESS FOR PREPARATION OF HIGH IMPACT POLYSTYRENE

Lyndon R. Babcock, Jr., Chicago, Ill., and Dale A. Walker, Cherry Hill, N.J., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 643,031, June 2, 1967, abandoned. This application Oct. 26, 1970, Ser. No. 84,225

Int. Cl. C08f 19/08, 41/12

U.S. Cl. 260—876 R 5 Claims

An improved process for the preparation of high impact polystyrene which comprises: (a) polymerizing monomers

from the group consisting of styrene, or mixtures thereof with minor amounts of acrylonitrile and/or lower alkyl acrylates to a conversion between about 30 and about 55 percent by heating said monomers between about 90 and 120°C, (b) separately interpolymerizing a diene rubber with styrene at a rate between 5 and 17%w weight per hour to a conversion between 13 and 30 percent, and (c) admixing the two streams and (d) non-catalytically polymerizing substantially all of the polymerizable monomers in the resulting mixture to form the high-impact polystyrene composition.

3,676,528

PREPARATION OF POLYMERIC COMPOSITIONS OF HIGH IMPACT RESISTANCE

Febo Severini; Alberto Valvassori, and Carlo Tavazzani, all of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Dec. 7, 1970, Ser. No. 97,475

Claims priority, application Italy, Dec. 10, 1969, 25582 A/69

Int. Cl. C08f *25/00, 45/68, 45/70*

U.S. Cl. 260—878 R 8 Claims

Graft polymers having high impact resistance are produced by polymerizing vinyl monomers in an aqueous emulsion of an olefinic rubber having a low degree of unsaturation, wherein the emulsion also contains an aromatic, aliphatic or cycloaliphatic hydrocarbon liquid stabilizer.

3,676,529

CURABLE GRAFT POLYMERS OF POLYALKYLENE OXIDES

Harry H. Fall, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 649,469, June 28, 1967, abandoned. This application July 24, 1970, Ser. No. 58,184

Int. Cl. C08f *29/56*

U.S. Cl. 260—887 9 Claims

Substituted olefin monomers, such as diene and vinyl monomers, may be grafted to solid poly-1,2-alkylene oxide by employing a tertiary-butyl-perester catalyst at between 40° C. and 100° C. Diene and vinyl monomers may be grafter individually or as mixtures depending on the graft polymer properties desired. The inclusion of dienes yields a sulfur-curable gum stock whose vulcanizates have excellent physical properties for use as a general purpose rubber.

3,676,530

PHOSPHATE ESTERS HINDERED THIOBISPHENOLS

Michael Robin, Colonia, and Sheldon R. Schulte, Highland Park, both of N.J., assignors to Ashland Oil & Refining Company, Houston, Tex.

Filed June 16, 1969, Ser. No. 833,807

Int. Cl. C07f *9/12*; C08f *45/58*

U.S. Cl. 260—949 6 Claims

Reaction products of a phosphate ester-forming compound such as a phosphorous oxyhalide and a hindered thiobisphenol are obtained. Such products are useful as antioxidants in various compositions and materials.

3,676,531

BIS-(HINDERED PHENOL)-ALKANE PHOSPHONATES

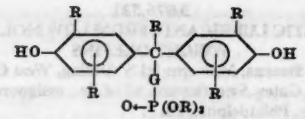
John D. Spivack, Spring Valley, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 19, 1969, Ser. No. 825,918

Int. Cl. C07f *9/40*

U.S. Cl. 260—953 7 Claims

Bis-(hindered phenol)-alkane phosphonates having the formula



wherein R is alkyl or other groups can be prepared by condensation reactions. These compounds are useful as stabilizers of organic materials subject to oxidative deterioration.

3,676,532

ALPHA-(DIALKOXYPHOSPHINYL)ARYL METHYL DIALKYL PHOSPHATES

Richard J. Turley, Derby, Conn., assignor to Olin Corporation

Filed Nov. 21, 1969, Ser. No. 878,928

Int. Cl. C07f *9/32*; C08g *22/44*

U.S. Cl. 260—970 7 Claims

A method for preparing alpha-(dialkoxyphosphinyl) arylmethyl dialkyl phosphates, useful for flame retardants in plastics, especially polyurethanes, condenses dialkyl phosphites with aroyl halides using tertiary alkylamines as hydrohalogen acid acceptors.

3,676,533

METHOD OF PREPARING PROPELLANT CHARGES FROM FIBROUS NITROCELLULOSE

Henry C. Dehm, Salt Lake City, Utah, and Dale F. Mellow, Sugar Grove, Va., assignors to Hercules Incorporated, Wilmington, Del.

Filed June 26, 1968, Ser. No. 740,073

Int. Cl. C06b *21/02*

U.S. Cl. 264—3 C 6 Claims

A process for preparing propellant charges from fibrous nitrocellulose is provided. The fibrous nitrocellulose is plasticized and then molded into a consolidated charge in which the fibers retain their individual identity. The propellant charges can be used as caseless cartridges for caseless ammunition.

3,676,534

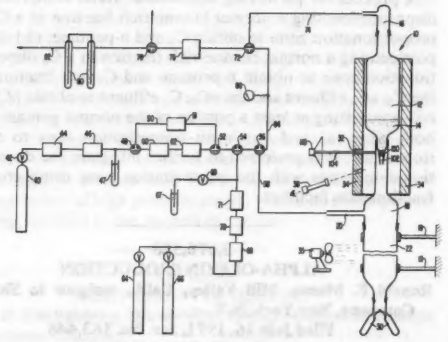
PROCESS RELATING TO ULTRA-PURE METAL HALIDE PARTICLES

Scott Anderson, 1116 W. Church St., Champaign, Ill.

Filed Sept. 26, 1969, Ser. No. 861,408

Int. Cl. B01j *2/18*

U.S. Cl. 264—9 16 Claims



Compositions are described including free-flowing particles of controlled size of purified metal halides such as sodium iodide and mixtures of sodium iodide with scandium iodide.

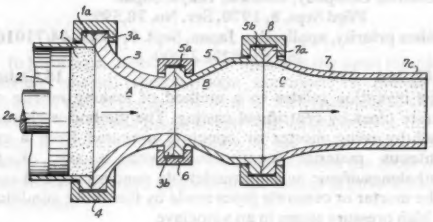
These ultra-pure metal halide particles are particularly useful as a vaporizable fill disposed within an arc tube of a high pressure electric discharge device. The preparation and identification of the coordination entity $Na^{+}Scl^{-}_{4}$ (III) is also described. The process for producing purified metal halides of accurately controlled particle size includes evaporating volatiles from the solid impure metal halide, melting the impure halide, passing hydrogen, hydrogen halide, hydrogen and halogen, or mixtures thereof through the halide, and then passing the molten halide through a vibrating discharge conduit or nozzle into an inert quenching atmosphere to form the particles of purified halide.

3,676,535

METHOD AND APPARATUS FOR CONTROLLING ORIENTATION OF NEEDLE-LIKE CARBON PARTICLES IN EXTRUDED CARBON STOCK

Leslie H. Juel, 611 Sandlewood Drive, Lewiston, N.Y.

Filed Nov. 7, 1969, Ser. No. 874,849
Int. Cl. B29f 3/04; C04b 35/54
U.S. Cl. 264—29 **19 Claims**



A means and method are provided for extruding compositions, particularly for extruding mixes of carbon and/or graphite particles and carbonizable binder, whereby the composition is subjected to greater working than normally encountered in conventional extrusion practices. This extrusion technique results in the elimination of or minimization of the effects of batch interfaces and in better consolidation of the mix. The means and method can additionally be employed to control the orientation of acicular particles in a composition during the extrusion thereof so as to control the properties of the extruded product.

In all cases, the extrusion die's internal configuration is defined by at least three "working" sections, (which may be interrupted by one or more sections of substantially constant cross section, e.g. cylindrical sections), consisting of a first converging section, then a diverging section, and then a second converging section. When employed in the extrusion of a carbonaceous mix containing needle-like carbon particles, dies of the present invention of appropriate design can be used to produce stock which after baking and graphitizing is characterized by having a transverse to longitudinal average coefficient of thermal expansion (CTE) ratio considerably less than that characteristic of corresponding stock in which the particles are all axially aligned.

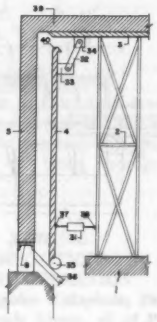
3,676,536

SYSTEM FOR PRODUCING MODULAR BUILDING BLOCKS

Shelley W. Shelley, Isla Verde, P.R., assignor to Shelley Systems Inc., Rio Piedras, P.R.

Filed Jan. 10, 1969, Ser. No. 790,305
Int. Cl. E04b 1/16
U.S. Cl. 264—33 **8 Claims**

The disclosure sets forth a system for prefabricating modular boxlike units of concrete, in which the upper slab or top slab is poured together with the walls and then subsequently is lifted and placed upon a lower slab form, whereby the lower slab is poured to create monolithic structure with the top, side



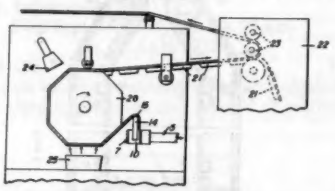
and partition walls. The outside walls and partition walls may also be precast and then placed in position with the pouring of the upper or top slab and then stripped monolithically with the upper slab.

3,676,537

CONTINUOUS METHOD OF EXTRUDING AND THEROFORMING SKIN-COVERED FOAMED THERMOPLASTIC ARTICLES

Thomas W. Winstead, 2 Overlook Lane, Baltimore, Md.

Continuation-in-part of Ser. No. 508,417, Nov. 18, 1965, abandoned. This application Dec. 8, 1969, Ser. No. 882,866
Int. Cl. B29d 7/04, 7/20, 7/24, 27/00
U.S. Cl. 264—48 **4 Claims**



Three-dimensionally formed articles of foamed thermoplastic material having a low-density core and at least one integral, high-density, thin skin are produced on a continuous basis. A narrow strip of the thermoplastic material is extruded at a high linear rate from an arcuate mouth die, immediately surface-chilled to produce the skin, laterally expanded over a curved mandrel, and fed continuously to apparatus for three-dimensionally forming individual articles. The operating parameters are critically controlled to permit deep-draw three-dimensional forming by utilization of the heat of extrusion.

3,676,538

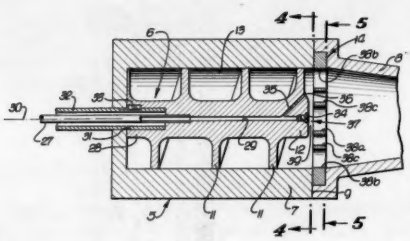
METHOD FOR SOAP BARS HAVING MARBLE-LIKE DECORATION

Charles B. Patterson, Lakewood, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Filed Feb. 4, 1970, Ser. No. 8,494
Int. Cl. B29f 3/12; B32b 31/30; C11d 13/18
U.S. Cl. 264—75 **14 Claims**

Method of producing marble-like appearance in a soap bar in which a saponaceous dye solution having color contrast

with the soap of the bar is injected through a screw end opening in a plodder screw and is distributed through a soap mass



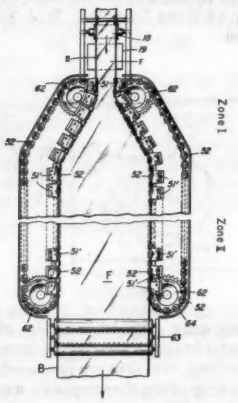
being extruded in a manner producing contrasting color streaks therethrough subdued at their boundaries for indistinct mergence with the extruded mass.

3,676,539

BIAXIAL ORIENTATION OF THERMOPLASTIC FILM

Robert E. Fisher, Fairport, N.Y., assignor to Mobil Oil Corporation

Filed Sept. 2, 1969, Ser. No. 854,471
Int. Cl. B29d 7/14, 7/24; D01d 5/08
U.S. Cl. 264—175 1 Claim



A continuous method for the production of biaxially oriented polypropylene film to produce an oriented film having uniform gauge and further characterized by having a high tensile modulus in the machine direction. The present method comprises extrusion of a molten base web into a pair of rotating nip rollers; passage of the polypropylene through the nip rollers into a quench bath whereby a solidified base film is formed, preheating the base film to an orientation temperature and thereafter stretching it in a transverse direction; subsequently stretching the transversely stretched film in the longitudinal direction. The temperature conditions during transverse direction orientation are maintained substantially isothermal as are the orientation temperatures during machine direction orientation, both transverse and machine direction orientation being accomplished within the confines of the single orientation chamber.

3,676,540

WET-SPINNING SHAPED FIBERS

Richard Neil Story, Cincinnati, Ohio, and Howard Bundegaard, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 696,495, Jan. 9, 1968, abandoned.
This application March 15, 1971, Ser. No. 124,583
Int. Cl. B28b 21/54; D01f 7/00
U.S. Cl. 264—177 F 8 Claims

A process for wet-spinning filaments of diversiform cross-sectional configuration comprising; extruding a fiber-forming polymer solution through orifices of diversiform cross-sectional configuration in a spinnerette of low thermal conductivity into a cold aqueous coagulating liquid while simultaneously and continuously withdrawing the resulting coagulum from said coagulating liquid at a linear velocity at least 0.5 times the average linear velocity of said polymer solution through said orifices.

3,676,541

CENTRIFUGAL CASTING METHOD

Seiya Nishi; Akira Oshio, both of Tokyo, and Kiyomitsu Eto, Kawaguchi, all of Japan, assignors to Onoda Cement Company Limited, Onoda-shi, Yamaguchi and Nippon Concrete Industries Company, Limited, Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,599
Claims priority, application Japan, Sept. 9, 1969, 44/71016
Int. Cl. B29c 25/00
U.S. Cl. 264—234 16 Claims

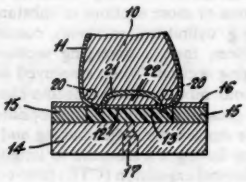
This invention relates to a method of making mortar or concrete pipes by centrifugal casting. The method is characterized by using mortar or concrete prepared from a cementiteous material incorporated with a salt of β-naphthalenesulfonic acid-formaldehyde condensate, and curing the mortar or concrete pipes made by the above condition with high pressure steam in an autoclave.

3,676,542

MANUFACTURE OF FOOTWEAR

Frank Vincent Maltby, Don Mills, Ontario, Canada, assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed Oct. 2, 1969, Ser. No. 864,290
Claims priority, application Great Britain, Oct. 2, 1968, 46,874/68
Int. Cl. B29h 7/08; B29f 1/022; A43d 65/00
U.S. Cl. 264—244 4 Claims

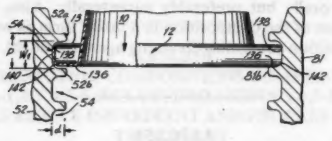


When hot injection molding thermoplastic soles onto textile components the sole portion of the last is heated to achieve better bonding. In order to markedly increase production, only the peripheral part of the sole portion of the last is heated, the middle (remaining) part is maintained at an effectively lower temperature. This is accomplished by providing a last having either an insulating layer between the middle and peripheral parts thereof, or, marking the middle part entirely of insulating material.

3,676,543
BRIM CURLING METHOD

Rheinhold Gerber, Rolling Meadows; James Edward Kerrigan, Arlington Heights, and Harry Ray Hawley, Lombard, all of Ill., assignors to American Can Company, New York, N.Y.

Division of Ser. No. 767,752, Oct. 15, 1968, Pat. No. 3,479,737. This application July 15, 1970, Ser. No. 62,742
Int. Cl. B29c *17/02*
U.S. Cl. 264—296 6 Claims



In forming a curled turned-in lip about the open mouth of a flexible walled, thermoplastic container, a plurality of threaded rollers engage the brim of the containers so that the faces of the thread progressively turn-in the brim as the container is advanced longitudinally of the rollers. The threaded rollers are arranged to bias the brim between the faces of the threads to facilitate formation of the turned-in lip as the rollers are rotated.

3,676,544
PROCESS FOR THE PRODUCTION OF POLYAMIDE MOULDINGS

Klaus Reinking, Krefeld; Helmut Vogel, Krefeld-Gartenstadt; Wilhelm Hechelhammer, and Kurt Schneider, both of Krefeld-Bockum, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 20, 1970, Ser. No. 39,140
Claims priority, application Germany, May 31, 1969, P 19 27 922.2
Int. Cl. B29f *1/08*
U.S. Cl. 264—329 9 Claims

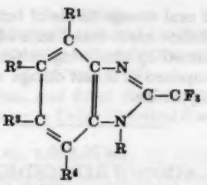
This invention relates to a process for the production of polyamide mouldings which comprises polymerizing a mixture consisting of a lactam, a catalyst and an activator in a screw injection moulding machine, said mixture being delivered to said screw injection moulding machine under the effect of an external pressure. The mixture is delivered at a pressure of at least 2 atms. under the influence of a pressure generator through a feed opening to the feed zone and a screw injection moulding machine and is polymerized in the injection moulding machine to form a polyamide at a temperature above the melting temperature of the polyamide and the resulting polyamide melt is forced by the injection moulding machine into a mould.

3,676,545
CERTAIN BENZIMIDAZOLE AS RODENTICIDES

David Thomas Saggers, Saffron Walden, England, assignor to Fisons Limited, Felixstowe, Suffolk, England

Filed Nov. 28, 1969, Ser. No. 880,938
Claims priority, application Great Britain, Dec. 3, 1968, 57,431/68
Int. Cl. A01n *9/22*
U.S. Cl. 424—273 13 Claims

Benzimidazole compounds of the formula



wherein R is alkyl of one to 12 carbon atoms and R^1, R^2, R^3 and R^4 are the same or different and are selected from the group consisting of hydrogen and halogen, not more than three of the groups R^1–R^4 being hydrogen are useful as rodenticides.

3,676,546
NEUTRALIZING COMPOSITIONS FOR PERMANENT WAVE OPERATION

Guilianna Ghilardi; Gregoire Kalopissis; Henry Philippe De Beaulieu, and Jean-Louis Abegg, all of Paris, France, assignors to Societe anonyme dite:L'Oreal, Paris, France

Filed July 24, 1969, Ser. No. 844,645
Claims priority, application Luxembourg, July 25, 1968, 56,584; July 9, 1969, 59,672
Int. Cl. A61k *7/10*
U.S. Cl. 424—71 5 Claims

A neutralizing composition to effect the second stage of neutralization of a permanent wave operation on the hair is an aqueous solution containing an N-methylol compound as an active compound in amounts of 0.5–12 percent by weight of the composition. An oxidizing agent can also be included in the composition in amounts such that the concentration of active compound and oxidizing agent is less than 1.7 moles/liter.

3,676,547
ASCARIS SUUM VACCINE

Reginald B. Galloway, Indianapolis, and Raymond F. Shumard, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sept. 18, 1970, Ser. No. 73,620
Int. Cl. A61k *23/00*
U.S. Cl. 424—88 3 Claims

Ascaris suum vaccine containing antigen(s) obtained from second and third stage larvae and method of cultivation of such larvae.

3,676,548
METHOD OF VACCINATING SWINE AGAINST JOWL ABSCESS DISEASE

Earl E. Ose, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sept. 18, 1970, Ser. No. 73,615
Int. Cl. C12k *5/00*
U.S. Cl. 424—92 2 Claims

Jowl abscess disease of swine is controlled by the addition of a live attenuated streptococcus group E vaccine to the drinking water of the swine. This vaccine may be combined with other orally-active vaccines effective against diseases of swine.

3,676,549
ADMINISTRATION OF ALKALI METAL SALTS OF SALICYLAMIDE

Takeru Higuchi, and Anwar Hussain, both of Lawrence, Kans., assignors to Alza Corporation

Continuation-in-part of Ser. No. 22,049, March 23, 1970. This application Sept. 30, 1970, Ser. No. 77,010
Int. Cl. A61k *9/00*
U.S. Cl. 424—44 2 Claims

Aqueous solutions of alkali metal salts of salicylamide are orally administered with significantly improved analgesic, anti-inflammatory, antipyretic and sedative results, as com-

pared with solid oral dosage forms of both salicylamide and the alkali or alkaline earth metal salts of salicylamide. The solutions are formed by dissolving in water an effervescent composition comprised of a unit dosage amount of an alkali metal salt of salicylamide.

3,676,550

MODIFICATION OF REDUCED KERATINOUS SUBSTRATES WITH A VINYL MONOMER

Giuseppe Anzuino, Vercelli, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 29, 1969, Ser. No. 829,096
Int. Cl. A61k 7/10
U.S. Cl. 424—71 6 Claims

A process for the treatment of a keratinous substrate comprising the steps of (1) reduction of the substrate and (2) contacting same with a solution of vinyl monomer and free radical liberating catalyst, step (2) being effected in the presence of a water-soluble halide.

3,676,551

PROCESS FOR OBTAINING EXTRACTS FROM ANIMAL TISSUES

Yvonne Thuillier, Paris, France, assignor to Laboratories Albert Rolland, Paris, France

Continuation-in-part of Ser. No. 530,325, Feb. 28, 1966, which is a continuation-in-part of Ser. No. 247,827, Dec. 28, 1962, abandoned. This application Oct. 3, 1969, Ser. No. 863,696
Claims priority, application France, Jan. 19, 1962, 62885273
Int. Cl. A61k 17/00
U.S. Cl. 424—103 9 Claims

Extracts of animal organs, useful in opotherapy, are prepared by removing from the organ aseptically collected immediately after slaughtering the animal, foreign matter, debris and fat. The remainder is then very rapidly frozen to about a temperature of −78° C. and maintained at a temperature of about −20° C. Thereupon, the organ is crushed at a temperature of about 2° C. and subjected to moderate digestion at room temperature by activated trypsin. By removing insoluble matter a clear solution is obtained. Euglobulins present in the solution are removed by affixing on an insoluble sulfate which is thereupon removed and the resulting solution is clarified. Finally, the clarified solution is rapidly freeze-dried at a temperature of about −80° C.

3,676,552

STABLE INSULIN MATERIAL

Ezra Levin, Champaign, Ill., and Ezra Levin, Champaign, Ill., assignors to Violin Corporation, Champaign, Ill.

Filed Oct. 9, 1967, Ser. No. 673,958
Int. Cl. A61k 17/04
U.S. Cl. 424—110 8 Claims

A substantially dry and substantially defatted solid pancreatic tissue material which contains active insulin in hormonal levels corresponding to the amount in an equivalent amount of fresh pancreas, but said solid material being substantially free of pancreatic enzymes. The dry product is stable at room temperature and therefore provides an improved insulin source material which can be more economically handled because of markedly smaller weight and easier handling properties, and which can be later processed to separate the insulin.

The improved, stable insulin source material is prepared by deactivating the pancreatic enzymes with acid treatment, then removing substantially all the water from the pancreas by azeotropic distillation; and removing substantially all the fat by dissolving in a fat organic solvent which is also used to form the azeotrope. The insulin present in the dry, stable material may then be conventionally separated and converted into acceptable pharmaceutical forms.

3,676,553

THERAPEUTIC COMPOSITION

Beverly L. Reynolds, Dallas, Tex., assignor to Cybersol, Inc., Dallas, Tex.

Filed Dec. 15, 1969, Ser. No. 885,295
Int. Cl. A61k 27/00
U.S. Cl. 424—128 11 Claims

A therapeutic composition comprised of an aqueous medium containing about 75–150 millimoles of Na^+, about 5–50 millimoles of K^+, about 5–50 millimoles of HCO_3^-, about 75–150 millimoles of Cl^- and preferably containing about 1–30 millimoles of Mg^{++} and about 1–30 millimoles of $HPO_4^{=}$ and/or $SO_4^{=}$; the solution having a pH of about 6.8–8.2 and an osmolality of about 170–460 and preferably about 260–340 and more preferably 290–310. The solution can be administered orally but preferably parenterally. Also, the anhydrous form of the composition in a tablet form as well as an oral composition containing flavoring agents is taught.

3,676,554

ANTI-ARTHRITIC COMPOSITIONS COMPRISING PHOSPHINE OR PHOSPHITE GOLD HALIDE COMPLEXES AND METHODS OF PRODUCING ANTI-ARTHRITIC ACTIVITY

Elizabeth R. McGusty, Philadelphia; Blaine M. Sutton, Hatboro, and Donald T. Walz, Drexel Hill, all of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Continuation-in-part of Ser. No. 884,709, Dec. 12, 1969, abandoned. This application Oct. 30, 1970, Ser. No. 85,694
Int. Cl. A61k 27/00
U.S. Cl. 424—198 10 Claims

Pharmaceutical compositions having anti-arthritic activity comprising a phosphine or phosphite gold halide complex and methods of producing anti-arthritic activity by administering internally, preferably orally, said compositions.

3,676,555

INSECTICIDAL AND ACARICIDAL AMIDO-THIOLPHOSPHORIC ACID ESTERS

Gerhard Schrader, Wuppertal-Cronenberg; Walter Lorenz, Wuppertal-Vohwinkel; Gunter Unterstenhofer, Opladen, and Ingeborg Hammann, Cologne, all of Germany, assignors to Farbenfabrikenbayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 468,585, June 30, 1965. This application March 13, 1968, Ser. No. 712,626
Claims priority, application Germany, July 2, 1964, F 43328
Int. Cl. A01n 9/36
U.S. Cl. 424—220 30 Claims

Certain amido-thiophosphoric acid esters are disclosed which are useful as insecticides and acaricides.

3,676,556

METHOD OF STABILIZING NIALINAMIDE AGAINST CAKING

Elmer De Ritter, Glen Rock, and Joseph Edward Raymond, Saddle Brook, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 596,768, Nov. 25, 1966. This application Sept. 26, 1969, Ser. No. 861,473
Int. Cl. A61k 15/12
U.S. Cl. 424—266 3 Claims

A therapeutically active, tasteless niacinamide powder stable against caking during storage is described. Mixtures of fatty acid monoglycerides and diglycerides are used as the anti-caking component.

3,676,557

LONG-ACTING NARCOTIC ANTAGONIST FORMULATIONS

Leon Lachman, Manhasset; Roy H. Reiner, Baldwin Harbor; Elie Shami, Hempstead, and Walter Spector, Valley Stream, all of N.Y., assignors to Endo Laboratories, Inc., Garden City, N.Y.

Continuation-in-part of Ser. No. 56,975, July 21, 1970, abandoned. This application March 2, 1971, Ser. No. 120,336
Int. Cl. A61k 27/12
U.S. Cl. 424—260 3 Claims

The pamoate salts of N-(cyclopropylmethyl)-7,8-dihydro-14-hydroxynormorphinone and N-allyl-7,8-dihydro-14-hydroxynormorphinone, in oil suspension, are injectable, long-acting forms of these narcotic antagonists.

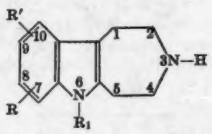
3,676,558

ANOREXIGENIC COMPOSITIONS COMPRISING 6-ALKYL-1,2,3,4,5,6-HEXAHYDROAZEPINO 4,5-INDOLES AS ACTIVE INGREDIENT AND PROCESS OF TREATMENT

Jackson B. Hester, Jr., Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 868,927, Oct. 23, 1969, which is a continuation of Ser. No. 548,880, May 10, 1966, abandoned. This application Aug. 28, 1970, Ser. No. 68,046
Int. Cl. A61k 27/00
U.S. Cl. 424—274 8 Claims

Compositions comprising 6-alkyl-1,2,3,4,5,6-hexahydroazepino[4,5-b]indole of the formula:



(Formula VI)

wherein R and R' are selected from the group consisting of hydrogen, alkoxy and alkyl containing from one to three carbon atoms, inclusive, and halogen; wherein R_1 is alkyl defined as above; including pharmacologically acceptable acid addition salts of those compounds, in combination with conventional pharmaceutical carriers. The compositions are used to suppress hunger in mammals.

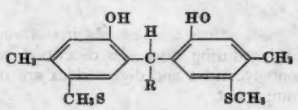
3,676,559

LAXATIVES COMPRISING SUBSTITUTED BIO(2-HYDROXY-4-METHYL-5-METHYLTHIOPHENYL)METHANES

Ronald J. Meyer; Orville E. Horsley, and Herman J. Eichel, all of Cincinnati, Ohio, assignors to American Hoechst Corporation, New York, N.Y.

Division of Ser. No. 740,054, June 28, 1968, Pat. No. 3,579,538. This application June 22, 1970, Ser. No. 59,809
Int. Cl. A61k 27/00
U.S. Cl. 424—275 2 Claims

Substituted bis(2-hydroxy-4-methyl-5-methylthiophenyl)methane compounds having laxative (cathartic) properties of the general formula:



3,676,560

PRODUCING DIURETIC AND SALURETIC EFFECTS WITH BENZOFURAN CARBOXYLIC ACID DERIVATIVES

Janos Zergenyi, Richen, and Ernst Habicht, Oberwil, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 746,267, July 22, 1968, Pat. No. 3,557,152. This application May 6, 1970, Ser. No. 47,933
Int. Cl. A61k 27/00
U.S. Cl. 424—285 4 Claims

5-(2-Bromo-2-bromomethyl-alkanoyl)-benzofuran-2-carboxylic acids and their pharmaceutically acceptable salts with bases have diuretic and saluretic activities. A typical embodiment is 5-(2-bromo-2-bromomethyl-butyryl)-6-methyl-benzofuran-2-carboxylic acid. A method of producing a diuretic and simultaneously a saluretic effect comprising administering said compounds to warm-blooded animals as well as pharmaceutical composition containing said compounds are provided.

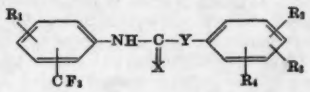
3,676,561

ANTHELMINTIC COMPOSITIONS CONTAINING NEW CARBAMATES AND THIOCARBAMATES AND METHOD OF USE

Walter Traber, Riehen; Alfred Margot, Basel, and Jean-Jacques Gallay, Baselland, all of Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

Division of Ser. No. 549,497, May 12, 1966, Pat. No. 3,609,177. This application April 4, 1969, Ser. No. 835,276
Claims priority, application Switzerland, May 18, 1965, 6926/65; May 18, 1965, 6927/65; May 18, 1965, 6928/65
Int. Cl. A61k 27/00
U.S. Cl. 424—300 10 Claims

There are disclosed anthelmintic compositions containing carbamates and thiocarbamates of the formula



in which each of R_1 and R_2 independently represents hydrogen, halogen or halogenoalkyl; R_3 represents hydrogen, halogen, nitro, cyano, hydroxyl, amino, carbamoyl, sulphamoyl, phenoxy or sulphonic acid group, alkyl, alkenyl, halogenoalkyl, aralkyl, alkoxy, alkylthio, alkoxyalkyl, alkylthioalkyl, alkylsulphinyl, alkylsulphonyl, S-alkylsulphonylamino, alkylsulphamoyl, dialkylsulphamoyl, alkyl-carbamoyl, dialkylcarbamoyl, alkylamino, dialkylamino, acylamino, acyl or carbalkoxy; R_4 represents hydrogen, halogen or alkyl; and X and Y each independently represents oxygen or sulphur. These compositions can also be incorporated into animal feeds.

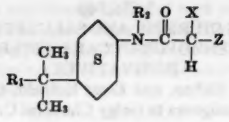
3,676,562

IRRITANT COMPOSITION COMPRISING N-DIHALOACETYL-4-ALKYLCYCLOHEXYLAMINE

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 634,131, April 2, 1967. This application Oct. 24, 1968, Ser. No. 770,445
Int. Cl. A01n 9/20
U.S. Cl. 424—320 8 Claims

Repelling animals with N-dihaloacetylcyclohexylamines of the formula:



wherein

R_1 is hydrogen or alkyl,
R_2 is hydrogen or alkyl,
X is halogen, and
Z is halogen.

Typical is N-dichloroacetyl-4-t-butylcyclohexylamine useful for repelling animals.

3,676,563

HYPERBARIC BREATHING MIXTURE

Frederick T. Ormand, and Huey V. Auger, both of Basking Ridge, N.J., assignors to Airco, Inc., New York, N.Y.

Continuation of Ser. No. 687,426, Dec. 4, 1967, abandoned. This application April 6, 1970, Ser. No. 23,101
Int. Cl. A61k *13/00, 27/00*
U.S. Cl. 424—366 1 Claim

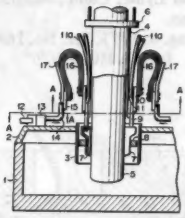
An oxygen component of suitable partial pressure for breathing is mixed with an inert component comprising carbon tetrafluoride (CF_4), or a mixture of carbon tetrafluoride and helium (He), the inert components having a combined pressure depending upon the pressure of the environment in which breathing is to be sustained. The relative volume percentages of the CF_4 and the He are adjusted to optimize certain properties of the breathing mixture to provide improvements over standard compressed air or helium-oxygen mixtures.

3,676,564

POWER SUPPLY EQUIPMENT FOR ELECTRIC SMELTING FURNACE OF LARGE CAPACITY

Yoshiyuki Fujiwara, Tokyo, Japan, assignor to Tanabe Kakoki Co., Ltd., Niigata-ken, Japan

Filed Aug. 10, 1971, Ser. No. 170,457
Int. Cl. F27d *11/08*; H05b *7/12*
U.S. Cl. 13—12 4 Claims



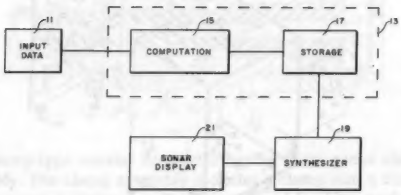
An improved power supply equipment for an electric smelting furnace of large capacity, which is characterized in that a plurality of conductors conveying electric power to the lower part of an electrode, each of which is connected to each segment of an electrode holder, are arranged in a manner that said conductor is not located on the side of the electrode facing the furnace center, and said conductors are connected to a fixed input terminal block in a manner that densities of electric currents in all the conductors are as equal as possible.

3,676,565

TIME DOMAIN WAVEFORM SYNTHESIZING METHOD

John Joseph Rowe, Bowie, Md., assignor to The Singer Company, New York, N.Y.

Filed Dec. 1, 1970, Ser. No. 93,979
Int. Cl. G09b *9/00*
U.S. Cl. 35—10.4 7 Claims



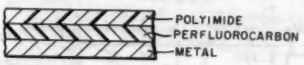
A method of synthesizing time domain waveforms from data in the frequency domain with improved resolution in the middle and lower frequencies. Frequency data is broken down into groups and each group processed through an inverse Fourier or fast Fourier transform to obtain time domain data which is then added together in the proper time relationship. The resulting composite digital information is then passed through a digital to analog converter to provide an analog time domain waveform.

3,676,566

LAMINAR STRUCTURES OF POLYIMIDE AND FLUOROCARBON POLYMERS

Richard T. McBride, Buffalo, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 468,148, June 29, 1965, abandoned, which is a continuation-in-part of Ser. No. 313,079, Oct. 1, 1963, abandoned. This application Aug. 18, 1967, Ser. No. 661,509
Int. Cl. H01b *3/30*, *7/34*; B32b *27/08*
U.S. Cl. 174—36 3 Claims



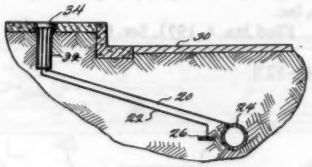
Laminar structures, electrical conductors therewith and the like composed of polyimide film, fluoropolymer film and thin metal sheet.

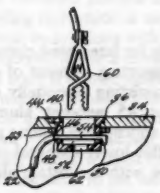
3,676,567

APPARATUS FOR USE IN TESTING FOR THE PRESENCE OF A GIVEN VOLTAGE WITH RESPECT TO GROUND ON A PIPELINE

Frank R. Zinn, Culpeper, Va., assignor to Bingham & Taylor, Culpeper, Va.

Filed Aug. 16, 1971, Ser. No. 172,116
Int. Cl. H02g *9/00*; C23f *13/00*
U.S. Cl. 174—37 10 Claims





An apparatus for use in testing for the presence of a given voltage with respect to ground on a pipeline or the like whereby, in place of the conventional cover plate for the test station tube which houses the wires which connect to ground and the pipeline respectively and which must be removed to electrically connect a voltmeter to the wires, a cover having at least two passages through it with an electrically insulating plug disposed in each passage is employed. For testing two or more pipelines lying close together, the cover can be provided with a set of two apertures for each pipeline to be tested. Each plug has an internal space which is communicated to the interior of the test tube by at least a single opening through which a wire passes so that an uninsulated portion thereof is

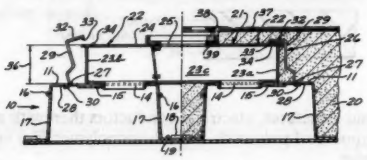
disposed within the interior space. A further opening communicates the internal space to the open air so that a voltmeter can be connected to both wires without removing the cover plate. If desired, a further opening between the internal space and the interior of the test tube can be employed for draining the space.

3,676,568

HOLD-DOWN MEANS FOR UNDERFLOOR ACCESS HOUSING

Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed July 9, 1971, Ser. No. 161,221
Int. Cl. H02g 3/04
U.S. Cl. 174—49 **9 Claims**



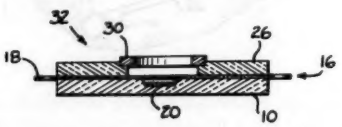
An underfloor access housing adapted for use with electrical raceway units of the type normally placed in building floors. The access housing spans the distance between adjacent cells and overlies the crests thereof. Separate hold-down means are provided for quickly connecting the access housing to the raceway unit.

3,676,569

INTEGRATED CIRCUIT PACKAGE

David F. Thompson, Warren, Pa., assignor to Sylvania Electric Products, Inc.

Filed Jan. 4, 1971, Ser. No. 103,387
Int. Cl. H05k 5/06
U.S. Cl. 174—52 S **5 Claims**



Packages suitable for integrated circuits comprise

a. a ceramic supporting element of predetermined outside dimensions consisting essentially of from about 35 percent to about 45 percent aluminum oxide and the remainder an appropriate sealing glass, the element has a substantially flat lower external surface and an internal sealing surface with a substantially centrally located indentation,

b. an electrically conductive element comprising a frame portion extending around the perimeter of the package and external to the ceramic supporting element, a central pad portion in the indentation of the sealing surface of the ceramic supporting element, and a plurality of electrically conductive leads extending inwardly from the frame portion toward the central pad portion and having at least one lead connected to the pad portion and a major portion of the lower surface of the leads in contact with the sealing surface of the ceramic supporting element,

c. a ceramic sealing element consisting essentially of from about 20 to about 30 percent by weight of aluminum oxide and the remainder essentially an appropriate sealing glass, the sealing element covers a substantial portion of the electrically conductive element having outside dimensions substantially the same as the outside dimension of the ceramic supporting element and containing an access port to the central pad, the port having predetermined dimensions, a lower sealing surface that forms a seal over a substantial portion of the leads and to the sealing surface of the supporting element and an upper substantially flat external surface,

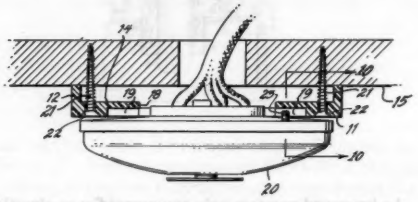
d. a metallic washer having an inside configuration substantially the same as the access port and in alignment therewith and the lower surface of the washer adhered to the external surface of the sealing element.

3,676,570

MOUNTING FOR FIRE DETECTOR DEVICES

William J. Gabb, Old Lyme, Conn., assignor to Fire Devices, Inc., Ivoryton, Conn.

Filed Aug. 4, 1971, Ser. No. 168,853
Int. Cl. H02g 3/20
U.S. Cl. 174—61 **7 Claims**



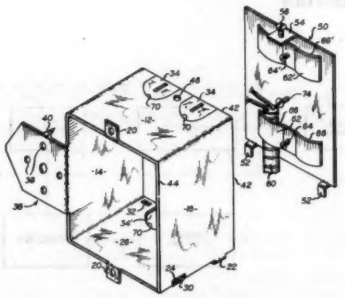
A mounting for fire detector devices is provided which comprises an adapter place of circular disc like shape with a plurality of spaced mounting holes and a rim extending from one face for flush mounting with said one face upwardly or on a junction box with said one face downwardly and for the attachment thereto of the fire detector device.

3,676,571

ELECTRICAL OUTLET BOX

Solomon Rubinstein, Fanwood, N.J., assignor to General Cable Corporation, New York, N.Y.

Filed March 10, 1971, Ser. No. 122,735
Int. Cl. H02g 3/08
U.S. Cl. 174—65 **11 Claims**



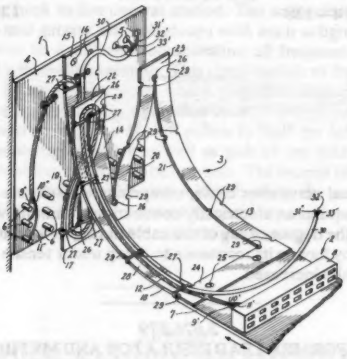
This electrical outlet or switch box is of two piece construction. One piece is the body which has an open front and an open back. A separate back plate incorporates the cable clamps and a ground wire terminating screw. This back plate attaches to the box after the cables have been connected to the back plate and after different connections between the cables have been made. It is particularly useful for preterminated wiring harnesses for factory built homes.

3,676,572

EXTENSIBLE CABLE STRUCTURE

Everett H. Davies, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed June 1, 1971, Ser. No. 148,650
Int. Cl. H01b 7/06
U.S. Cl. 174—69 8 Claims



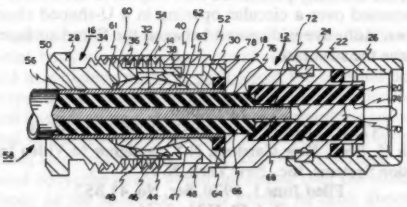
A self-reliant cable support of plane flexible insulating material is slit from opposite ends to form elongated strips, each joined to an adjacent strip at one end to produce a serpentine path from an end rigidly mounted on a first piece of equipment, such as an instrument rack, to another end rigidly mounted on a second piece of equipment, such as a measuring or control instrument, movable linearly with respect to the first piece. Wire or other flexible conductors are affixed in a single layer to one surface of the support along the serpentine path, forming a compact extensible structure to transmit signals between said pieces of equipment.

3,676,573

COAXIAL CONNECTOR HAVING ONE-PIECE CLAMP ASSEMBLY

Roger Peter Avery, Bethel, Conn., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed June 22, 1970, Ser. No. 48,059
Int. Cl. H02g 15/08
U.S. Cl. 174—75 C 12 Claims



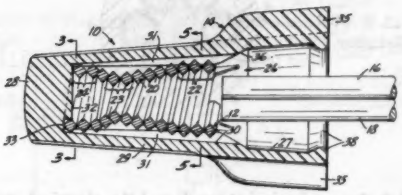
A clamp-type coaxial connector having a one-piece clamp assembly. The clamp assembly includes a clamp nut, a clamp bushing, and a clamp ferrule. The nut and bushing each include a member adapted to coact with the member of the other element to secure the nut and bushing together in a manner such as to permit limited axial movement between the elements. The nut is adapted to coact with a connector body to secure the clamp assembly to the body and to drive the nut and bushing toward each other. A counter-bore exists in the nut and/or the bushing in which the ferrule is captivated, the counter-bore having an angled surface which coacts with the ferrule as the nut and bushing are driven toward each other to clamp the ferrule against the outer conductor of a coaxial cable.

3,676,574

DEFORMABLE FIN SPRING CONNECTOR

Ronald C. Johansson, Oakdale, and Wayne Donald Weeklund, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 18, 1970, Ser. No. 99,365
Int. Cl. H02g 15/08
U.S. Cl. 174—87 5 Claims



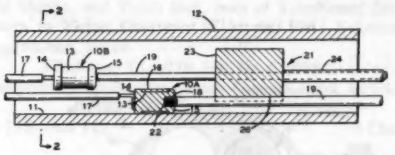
A tapered coiled spring wire secured within an insulating shell containing interior deformable fins for engagement with the spring wire to form retaining threads in the fins and avoid any substantial tensioning or deformation of the shell.

3,676,575

BRAZEABLE TERMINAL BODY

Galen K. Weaver; Howard A. Shaffer, and Stephen A. Coughlin, all of Alliance, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Division of Ser. No. 754,889, Aug. 23, 1968, Pat. No. 3,553,812. This application Oct. 12, 1970, Ser. No. 79,934
Int. Cl. H02g 15/08
U.S. Cl. 174—94 R 1 Claim



A metal terminal body provided with an external coating of brazing material and a threaded portion for connecting the terminal body to a holding rod which is used for positioning and installing the terminal body, along with one or more conductor wires attached thereto, inside a metal tube. While held by the rod, the terminal body is braced against the tube wall at a selected location by means of a block inserted into the tube by means of another rod and which permits the block to be moved in sliding contact with the holding rod and the tube wall. The tube is externally heated to melt the brazing material on the terminal body to fuse same to the tube wall after which the block is withdrawn and the holding rod is disconnected from the terminal body.

3,676,576

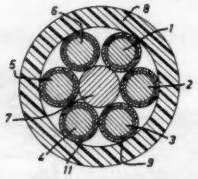
MULTICONDUCTOR STRANDED REMOTE-CONTROL CABLE

Robert Dubernet, Chatillon-Sous-Bagneux, and Michele Sabatie, La Garenne-Colombes, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed July 6, 1970, Ser. No. 52,178
Claims priority, application France, July 7, 1969, 6923008
Int. Cl. H01b 11/02
U.S. Cl. 174—113 R 5 Claims

Multiconductor cable comprising a plurality of metal wires of high unit tensile strength, at least two wires fulfilling wholly

or in part the function of an electrical conductor, a core withstanding the mechanical forces to which the cable is subjected when it is unwound, certain of the multiple wires being grouped to form a multi-strand single-channel conductor in



which the mechanical strength and the electrical resistance are locally distributed at distinct location, said cable receiving a plastic protective coating obtained by extrusion or impregnation.

3,676,577

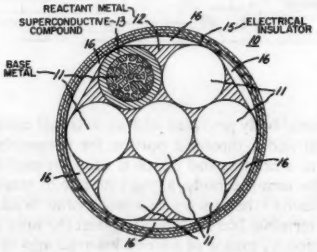
SUPERCONDUCTORS CONTAINING FLUX TRAPS

Donald L. Martin, Elnora, and Mark G. Benz, Burnt Hills, both of N.Y., assignors to General Electric Company

Continuation of Ser. No. 764,158, Oct., 1968, abandoned, which is a division of Ser. No. 467,577, June 28, 1965, Pat. No. 3,429,032, which is a continuation-in-part of Ser. No. 316,269, Oct. 15, 1963, abandoned. This application June 15, 1970, Ser. No. 57,418

Int. Cl. H01v *11/08*

U.S. Cl. 174—119 R **13 Claims**



The properties of superconductors of the niobium-tin type may be improved by the provision of flux trapping or pinning sites therein in the form of a dispersion of stable particles formed by the reaction between a metal such as zirconium for example, and a non-metal such as oxygen, nitrogen or carbon to form the corresponding metal oxides, nitrides or carbides. While the particle forming metal may be present as an alloying ingredient in either the tin bath through which the niobium strand is passed, or as an alloying ingredient in the niobium strand, where the superconductor is Nb_3Sn, it is preferred to use a niobium-zirconium alloy. In the process, a niobium-zirconium alloy strand is passed through a molten tin bath to form a tin coating thereon and subsequently heat treated in the presence of the non-metal reactant whereby an Nb_3Sn superconductive layer is formed containing the stable reaction product dispersion.

3,676,578

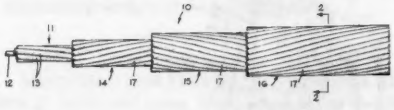
ELECTRIC CONDUCTOR CABLES FOR USE IN OVERHEAD POWER TRANSMISSIONS

Terence Cahill, Porthcawl, Wales, assignor to G.K.N. Somerset Wire Limited, Cardiff, Glamorgen County, Wales

Continuation-in-part of Ser. No. 800,223, Feb. 18, 1969, abandoned. This application Oct. 14, 1970, Ser. No. 80,688

Int. Cl. H01b *5/10*

U.S. Cl. 174—128 **12 Claims**



Overhead conductor cable, comprising a steel core around which is wound an electrically conducting aluminum winding, in which the degree of sag of the cable during its working life is reduced by having its resistance to creep under tensile loading substantially increased.

3,676,579

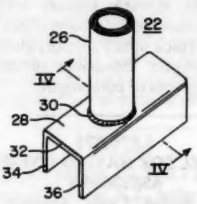
TRANSFORMER LEAD INSULATOR AND METHOD OF MAKING SAME

Thomas J. Lanoue, Muncie, and John G. De Neef, New Castle, both of Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1971, Ser. No. 167,939

Int. Cl. H01b *17/58;* **H01f** *15/10, 27/32*

U.S. Cl. 174—138 R **6 Claims**



High voltage lead insulator for shell-form transformers and method of constructing same. Hollow cylindrical members, being constructed of pressboard and having one of their ends flared, are coaxially positioned with respect to each other and are mounted over a circular opening in a U-shaped channel member. Adhesive is disposed between the flared surfaces to reinforce the structure.

3,676,580

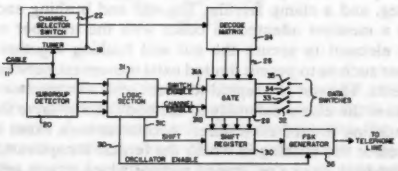
INTERROGATED TRANSPONDER SYSTEM

Joseph H. Beck, Kew Gardens, N.Y., assignor to Video Information Systems, Inc., New York, N.Y.

Filed June 1, 1970, Ser. No. 41,853

Int. Cl. H04n *1/44*

U.S. Cl. 178—5.1 **19 Claims**



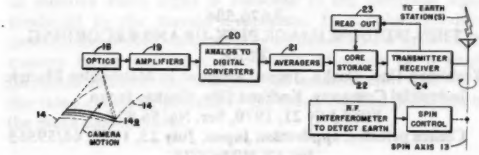
An interrogated transponder system of the type which may be used for billing purposes with subscription television

systems, wherein a central station interrogates a large number of individual subscriber stations to determine the condition of the subscriber's receiver and/or an associated terminal device. Each transponder includes a storage register of the type in which data may be stored in parallel and read out in serial form. The information stored in the register may represent the channel to which the receiver is tuned or the condition of a plurality of data switches which enable the subscriber to transmit data back to the central station. The subscribers may be divided into groups and subgroups with each subgroup being responsive to a different combination of frequencies transmitted by the central station. This combination of frequencies is used as an address code which identifies each individual subscriber or terminal station. One of the transmitted frequencies is used as a source of shift pulses to shift the information from the storage register as well as part of the address code which identifies the subscriber station. The output of the shift register, in serial form, is transmitted back to the central station by FSK techniques, with the frequencies employed identifying the specific subscriber within the subgroup.

3,676,581
OPTICAL SCANNING SPACECRAFT SYSTEM

Charles J. Swet, Mount Airy, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 1, 1971, Ser. No. 111,345
Int. Cl. H04n *1/46*
U.S. Cl. 178—5.4 R **10 Claims**

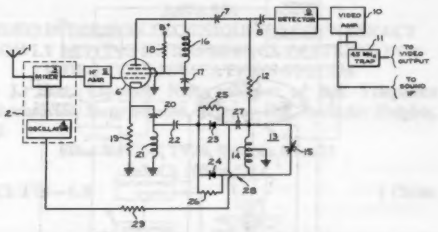


A method and apparatus for mapping the surface of a celestial body employs a spin stabilized spacecraft which is placed in a highly eccentric orbit about the celestial body to be mapped and whose spin axis is always Earth oriented. An optical line-scanning system is mounted aboard the spacecraft normal to the spacecraft spin axis and repeatedly sweeps out an elongated image strip or swath on the surface of the celestial body; the image swath advancing over the surface of the body as the spacecraft spins during its orbit about said body. The optical scanning system includes a mechanical slit which is dimensioned such that when it is projected onto the surface of the celestial body it forms one line of the desired image swath. Suitable spectral dispersing means receives the light passing through the mechanical slit and disperses it onto a mosaic of photosensors. The photosensor mosaic is arranged to produce output voltages indicative of the light intensity of the light image occurring at preselected spectral regions of the image. The highly eccentric orbit into which the spacecraft is placed about the celestial body permits close-up and broader coverage pictures to be obtained during each orbit of the spacecraft. It also helps to reduce the velocity change requirements for planetary capture, and lengthens the orbital period to permit continuous transmission to Earth of a complete picture at modest data rates.

3,676,582
EMPHASIZED CARRIER CIRCUIT WITH INTEGRAL AFC OPERATION

John G. Humphrey, Chesapeake, Va., assignor to General Electric Company

Filed March 3, 1971, Ser. No. 120,500
Int. Cl. H04n *5/50*
U.S. Cl. 178—5.8 AF **4 Claims**

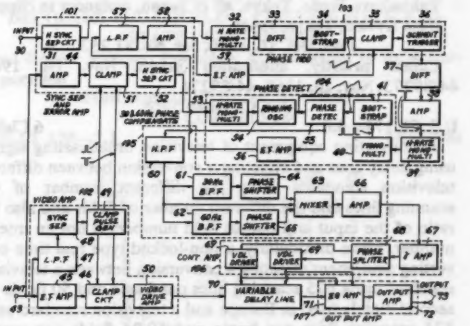


A resonant circuit is coupled to the output of the final IF amplifier stage of a television receiver for emphasizing the picture carrier portion of the signal outputted by the IF amplifier. Filter means are provided for abstracting the picture carrier frequency from the IF signal applied to the input of the final amplifier stage. A discriminator compares the phase of the signal provided by the resonant circuit with that of the signal abstracted from the IF amplifier input, and applies an output signal reflecting the relationship therebetween to the tuner stage of the receiver to minimize any difference between the frequency of the picture carrier and that of the resonant circuit.

3,676,583
JITTER CORRECTION SYSTEM

Akiyoshi Morita, and Yukio Itoh, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan

Filed Aug. 13, 1970, Ser. No. 63,425
Claims priority, application Japan, Aug. 13, 1969, 44/64360
Int. Cl. H04n *5/04, 5/78*
U.S. Cl. 178—6.6 TC **6 Claims**

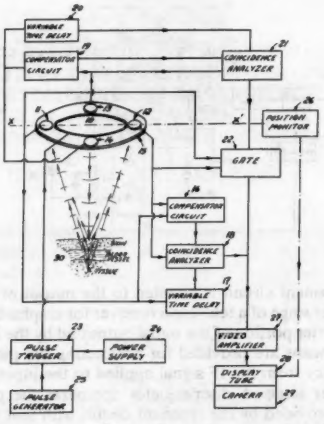


A jitter correction system detects and removes a jitter component, of relatively high frequency, from a reproduced video signal. A reference signal is phase modulated by a jitter component of relatively low frequency. The modulated reference signal and the reproduced signal are compared in phase. The jitter component of low frequency is taken out from the phase-compared error output and fed back to the phase modulating means. On the other hand, the jitter component of high frequency is effectively taken out from the error output.

3,676,584
ECHO COINCIDENCE ULTRASONIC SCANNING

Chris J. Plakas, 606 Bloomington Road, Champaign, Ill., and Mee See Phua, 65 Hawaii Avenue, Washington, D.C.

Filed July 13, 1970, Ser. No. 54,158
Int. Cl. H04n 7/00
U.S. Cl. 178—6.8 5 Claims



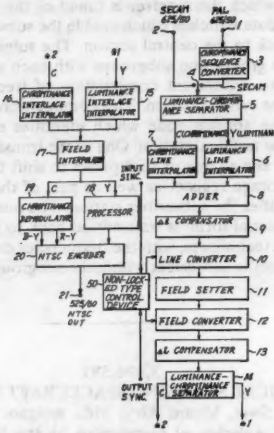
An ultrasonic visualization system for investigating human tissue structures, comprising pulse generator, power supply, pulse trigger, one transducer which transmits ultrasonic pulses, four transducers, arranged at 90° angles around the center transmitter, which receive reflected echoes, video amplifier and display tube. The output pulses of each pair of receivers 180° apart are connected through time coincidence circuitry to detect echoes originating only at the axis of the ultrasonic beam and to reject multiple reflection echoes, thus echograms of high resolution are obtained.

3,676,585
CONVERTING EQUIPMENT OF STANDARD TELEVISION BROADCASTING SIGNALS

Ryuichi Kaneko; Toshiya Saito; Yasushi Fujimura; Hiroshi Ianimra, all of Tokyo; Totaro Nakamura, Sagamihara, and Yukisaburo Ikedo, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Oct. 16, 1970, Ser. No. 81,253
Claims priority, application Japan, Nov. 10, 1969, 44/89273; Nov. 10, 1969, 44/89274
Int. Cl. H04n 5/02
U.S. Cl. 178—6.8 6 Claims

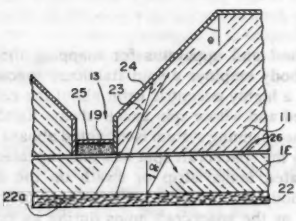
A converting equipment of television broadcasting signals using delay lines and effecting a conversion between different television standards using the different number of the scanning lines and the different number of fields and also the ratio of the input and output field numbers is not an integer number. More particularly, a non-locked type real time converting equipment effecting a conversion between a television standard using 625 scanning lines per frame and 50 fields per second mainly used in Europe and a television standard using 525 scanning lines per frame and 59.94 fields per second mainly used in the United States of America and Japan. The equipment comprises a signalling system having as main constructive elements, a line interpolator, a line converter, a field converter and a field interpolator and a controlling system controlling the signalling system and effecting a non-locked type television standard conversion. The non-locked type television standard system conversion may be effected by successively setting states or conditions of the conversions such as for instance, a field conversion, a line conversion, etc., starting from a conversion having a larger conversion unit period in accordance with a phase difference between input and output fields to be converted, and then to a conversion having a minimum conversion unit period and the line conversion and the field conversion are controlled with respect to the conditions of the conversion. The converting equipment can be used for the both way real time conversion and has an essential feature that the converted output signal is correctly locked to the synchronizing signal of the television signal of the output side.



3,676,586
THIN-WINDOW IMAGE PICK-UP AND RECORDING TUBE

Yoshihiro Uno, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Kadoma City, Osaka, Japan

Filed July 21, 1970, Ser. No. 56,872
Claims priority, application Japan, July 23, 1969, 44/59565
Int. Cl. H04n 3/16
U.S. Cl. 178—7.2 15 Claims

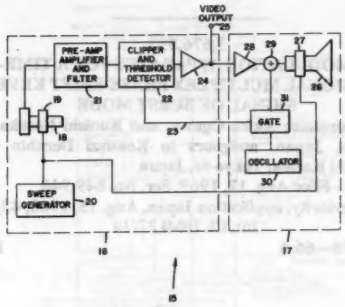


A thin-window image pick-up and recording tube comprising an evacuated envelope having a transparent face portion with an elongated thin window, a fluorescent layer being disposed within said window and at least one longitudinal wall of said window being formed to have at least one portion the normal to which is inclined from the normal to said face; deflecting means for deflecting the electron beam emitted from the electron gun to scan said fluorescent layer laterally of said window so that a flying spot is produced in said layer; a plate transparent to said flying spot and disposed on said face so as to cover said window. The thin-window tube is capable of not only recording but picking up optical images with a satisfactory image quality.

3,676,587
TELEVISION CAMERA OVEREXPOSURE WARNING SYSTEM

Donald D. Kline, Palo Alto, Calif., assignor to Commercial Electronics, Inc., Mountain View, Calif.

Filed Aug. 27, 1970, Ser. No. 67,454
Int. Cl. H04n 5/21, 5/34
U.S. Cl. 178—7.2 **4 Claims**

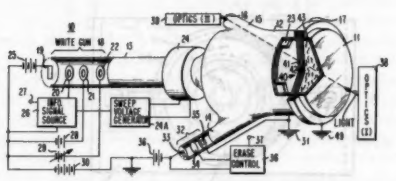


A television camera overexposure warning system in which those portions of the television image which exceed a desired level of illumination of the television camera tube are caused to blink at a visible rate on the screen of the television camera viewfinder or monitor. This is accomplished by providing a threshold detector which produces an electrical signal when the amplified output signal of the camera tube exceeds a level corresponding to the maximum desired level of illumination and a gate which couples an oscillator to the viewfinder finder or monitor video input in response to the electrical signal produced by the threshold detector. In a color television camera, threshold detectors may be provided for each of the camera tubes and associated video channels or a single threshold detector may be employed in association with one of the video channels, preferably the video channel produced by the green camera tube.

3,676,588
DEFORMOGRAPHIC TARGET ASSEMBLY WITH INTEGRAL CONDUCTIVE MEMBER

Eugene T. Kozol, Binghamton, N.Y., and Robert J. Wohl, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,187
Int. Cl. H04n 5/66; H01J 29/12; G02f 1/28
U.S. Cl. 178—7.5 D **7 Claims**

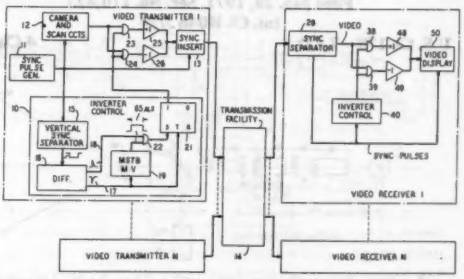


The conductive member associated with the target assembly of a deformographic display system is affixed to one side of the deformable dielectric member of the target assembly. The opposite side of the deformable dielectric member is affixed to the relatively non-deformable dielectric member, which is part of the target assembly and which stores the electrostatic charge pattern containing the information to be displayed. The conductive member is deformable and compatibly deforms with the deformable dielectric member in response to the deformations of the latter. The deformations of the dielectric member in turn are produced by the forces of the electrostatic field which results between the conductive member and the electron charge pattern. By affixing the conductive member to the deformable dielectric member, the deformations occur substantially in the same or one direction, i.e., in a direction towards the non-deformable dielectric member.

3,676,589
VIDEO INVERSION TECHNIQUE TO COUNTERACT SLOWLY MOVING INTERFERENCE PATTERNS IN A VIDEO COMMUNICATIONS SYSTEM

John J. Jetzt, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 16, 1970, Ser. No. 89,621
Int. Cl. H04n 5/14
U.S. Cl. 178—6.8 **1 Claim**

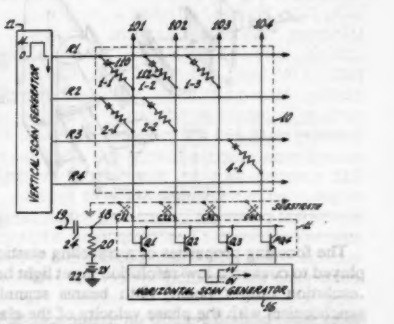


To virtually eliminate from a video channel the interference due to the horizontal synchronization pulses of another juxtaposed video channel, the video portion of each composite video signal is inverted in every other field prior to transmission of the same. Then at each receiver, the video is reinverted to recover the original video signal. As a result, the interfering horizontal pulses alternate in polarity in alternate scan fields and thus tend to be neutralized because of the integration effects of the human eye.

3,676,590
DECODERS AND COUPLING CIRCUITS FOR SOLID STATE VIDEO PICKUP

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation

Filed Sept. 25, 1970, Ser. No. 75,553
Int. Cl. H04n 5/30
U.S. Cl. 178—7.1 **14 Claims**



Circuit means for storing charge produced by elements of a matrix array and for producing an output signal indicative of

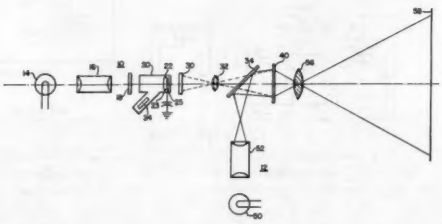
the amount of charge stored. In two of the circuits illustrated, each column of the array is coupled to the base of a transistor and to one terminal of a charge storage means and two valued sampling pulses are applied between the emitter of the transistor and the other terminal of the charge storage means. For one value of the sampling pulse the transistor is reversed biased and charge generated by one of said elements is accumulated on said charge storage means. For the other value of the sampling pulse, the transistor is forward biased for reading out the charge stored on said means and concurrently removing the accumulated charge on said storage means. In another of the circuits a pair of diodes are employed at each column rather than a transistor.

3,676,591

PHOTOCHROMIC DISPLAY DEVICE UTILIZING LIGHT VALVE ACTIVATION

Lawrence A. Nix, Jr., and David L. Balthis, both of Ellicott City, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1971, Ser. No. 110,423
Int. Cl. H04n *5/74*
U.S. Cl. 178—7.5 D **4 Claims**



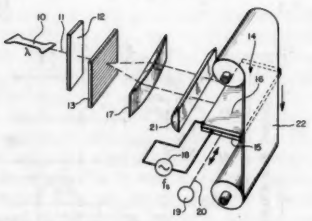
A photochromic display device in which a light valve projection system is utilized for activating the photochromic screen member to establish video information thereon. A uniform light source directs white light through the photochromic screen and is projected onto a viewing screen.

3,676,592

HIGH-RESOLUTION LINEAR OPTICAL SCANNING SYSTEM WITH TRAVELING WAVE ACOUSTIC LENS

Leigh Curtis Foster, Atherton, Calif., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 30, 1969, Ser. No. 872,559
Int. Cl. G02f *1/28, 1/36;* H04n *1/04*
U.S. Cl. 178—7.6 **24 Claims**



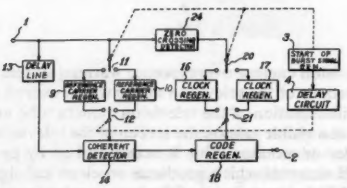
The focusing properties of a traveling elastic wave are employed to convert a low-resolution input light beam into a high resolution output beam, both beams scanning linearly in synchronism with the phase velocity of the elastic wave. The elastic wave can be a dilational wave in a transparent solid or liquid of, for example, acoustic character, or a flexural wave on a thin reflector. Specifically, scanning optical beam is projected through appropriate optics to focus on the input plane of the traveling-wave dynamic lens in such a way as to scan transversely at the velocity of a traveling acoustic wave. The acoustic wave is phased such that the instantaneous axis of symmetry of the traveling lens coincides with the optical axis of the scanning input beam, and this relationship is maintained throughout the duration of the line scan. The size of the input spot is restricted to cover a total of approximately one-fourth of an acoustic wavelength, in order to avoid aberrations in the dynamic lens.

3,676,593

DEMODULATION APPARATUS FOR A TIME-DIVISIONAL MULTIPLEX PHASE-SHIFT KEYED SIGNAL OF BURST MODE

Takuro Muratani; Akira Ogawa, and Kunishi Nosaka, all of Tokyo-to, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 12, 1969, Ser. No. 849,946
Claims priority, application Japan, Aug. 15, 1968, 43/57785
Int. Cl. H04l *27/14*
U.S. Cl. 178—66 A **1 Claim**



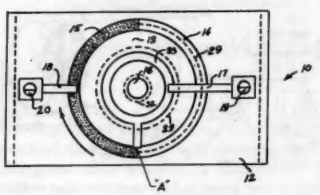
A demodulation apparatus for performing coherent detection and code regeneration of a time-divisional multiplex phase-shift keyed signal of burst mode (PSK signal), where the PSK signal and a detected base band signal are respectively applied to a coherent detector and a code regenerator after such signals are delayed by a time necessary to produce a reference-phase carrier wave for the coherent detection and by a time necessary to produce a clock wave for the code regeneration respectively, so that all bits of the PSK signal can be correctly regenerated even if there is no guard time between two successive bursts.

3,676,594

SOUND DISPERSER

Thomas H. Shore, 11010 24 Mile Road, Utica, Mich.

Filed Nov. 4, 1969, Ser. No. 873,984
Int. Cl. H04b *1/12*
U.S. Cl. 179—1 VL **4 Claims**

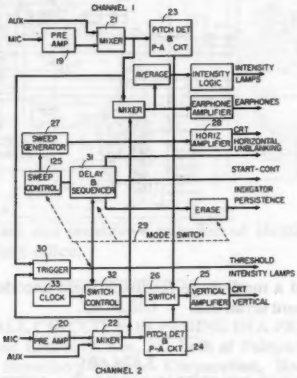


An audio system having an output which is varied by a rotating disc. The disc has sections of high and low resistance. The audio signal is coupled through a transformer and the resistive disc element to an output transducer, and is also coupled to a second output transducer without being coupled through the resistive disc element.

3,676,595
VOICED SOUND DISPLAY

Ladislav Dolansky, Weston, and Nathan D. Phillips, Stoneham, both of Mass., assignors to Research Corporation, New York, N.Y.

Filed April 20, 1970, Ser. No. 30,123
Int. Cl. G10l 1/14
U.S. Cl. 179—1 VS 8 Claims

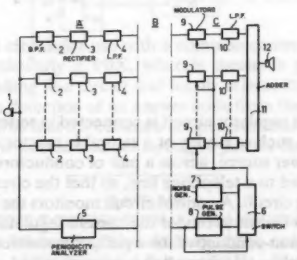


Voiced sounds are displayed by means of a pitch period indicating circuit including circuits for the suppression of those errors which arise from a minimal number of parameters. Automatic sequencing is provided in a compact setting to provide equipment ideally suited for instruction of young students.

3,676,596
PERIODICITY ANALYSER FOR A QUASI-PERIODIC SIGNAL INCLUDING A DETECTION CIRCUIT

Leonardus Franciskus Willems, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,639
Claims priority, application Netherlands, July 9, 1969, 6910496
Int. Cl. G10l 1/02
U.S. Cl. 179—1 SA 13 Claims



A periodicity analyzer as a pitch meter for a quasi-periodic signal, for example speech, equipped with a detection circuit which converts the signal into a plurality of pulses the positions of which correspond to those of the peaks of the quasi-periodic signal, which detection circuit includes a peak detector the time constant of which is substantially equal to the shortest period of the quasi-periodic signal to be detected, while the pulses are applied to a cascade arrangement of a plurality of period filters the greater part of which have mutually different characteristic time durations.

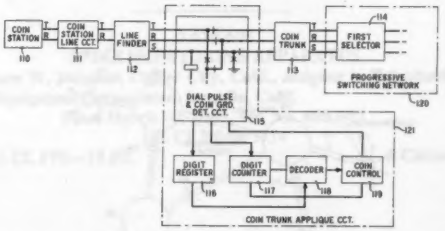
The greater part of the time durations form an ascending series. With each period filter there is associated an auxiliary circuit comprising a stretcher and an input AND gate in order to distinguish the main periods from the sub-periods. Thus, by measuring the spacings between the peaks in the speech signal to be examined, which have been transformed into pulses, the pitch is directly determined. This is effected by means of a digital analog converter.

This periodicity analyzer can advantageously be used in a vocoder as a pitch detector.

3,676,597
COIN TELEPHONE NON-COIN SERVICE

Gerald Henry Peterson, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 28, 1970, Ser. No. 101,978
Int. Cl. H04m 17/00
U.S. Cl. 179—6.3 R 11 Claims

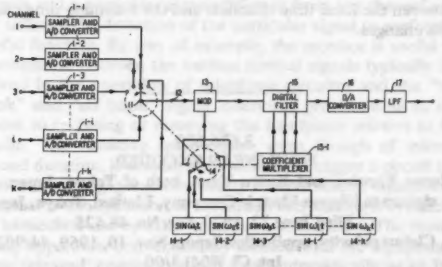


A circuit is disclosed for providing coin-free call service for certain specifiable dial codes and for prohibiting fraudulent calls. The circuit provides an initial dial tone and checks the first three digits dialed without any coins being deposited. If a coin-free code is dialed, the circuit allows the call to be completed. If a coin-free code is not dialed, the circuit performs a coin test and allows the call to be completed, if proper coinage is detected. Otherwise the already established connection through the network is caused to be taken down, and the calling party is connected to a recorded announcement.

3,676,598
FREQUENCY DIVISION MULTIPLEX SINGLE-SIDEBAND MODULATION SYSTEM

Carl Ferdinand Kurth, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 8, 1970, Ser. No. 44,030
Int. Cl. H04j 1/02
U.S. Cl. 179—15 FD 19 Claims



A frequency division multiplex single-sideband modulation system uses a multiplexed digital filter, the passband of which is sequentially shifted from one multiplexed channel to another in synchronization with an input time division mul-

tiplex commutator and a frequency multiplexer modulator. In other embodiments of the invention selected spectral components are advantageously emphasized by signal processing techniques employing repetitive sampling prior to modulation and filtering.

3,676,599

TELECOMMUNICATION DEVICE

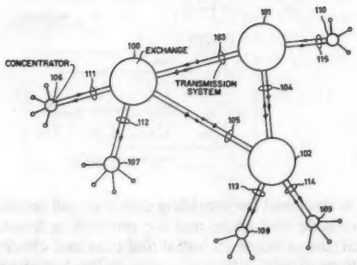
Alphonsus Heetman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 15, 1971, Ser. No. 106,797

Claims priority, application Netherlands, Jan. 23, 1970, 7000939

Int. Cl. H04j 3/06

U.S. Cl. 179—15 BS 1 Claim



Telecommunication arrangement for receiving, storing and reading pulsecodemodulated, timemultiplex signals emanating from incoming multichannel transmission systems and received therefrom with varying periodic timescales or reception, which consist of equal channel intervals, in which each incoming multichannel transmission system is connected to a transposition arrangement for transducing the channel information of each incoming time channel into an associated local time channel, which is determined by a local clock and in which each local time channel has associated therewith a storage location for storing the channel informations that are transposed to said local time channel, there being provided an address modification arrangement for modifying the addresses for reading in the storage locations, when as a result of a shift of the time scale of reception, the correspondance that exists between the local time channels and the incoming time channels changes.

3,676,600

NONLINEAR ENCODER

Haruo Kaneko, and Kaoru Yano, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

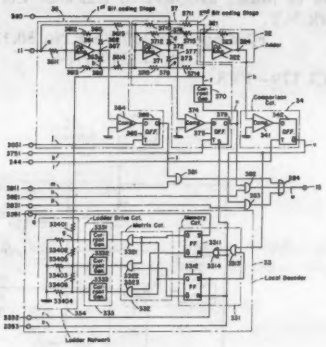
Filed June 22, 1970, Ser. No. 48,425

Claims priority, application Japan, Nov. 10, 1969, 44/90326

Int. Cl. H04j 3/00

U.S. Cl. 179/15.55 T 11 Claims

A multi-bit nonlinear apparatus for encoding an amplitude modulation pulse analog signal of positive and negative polarities into a series of bits in a pulse code modulation system, including two non-linear direct current amplifier stages for translating the input analog signal into first and second serial bits, and a mutli-stage feedback logic encoder for providing subsequent serial bits.



3,676,601

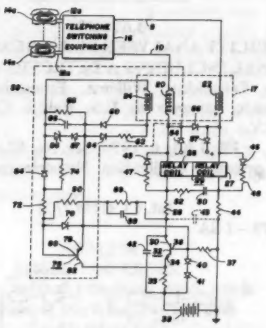
PULSING CIRCUIT INCLUDING A SWITCHING AND CURRENT REGULATOR CIRCUIT

William E. Shaffer, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,645

Int. Cl. H04g 1/36

U.S. Cl. 179—16 E 18 Claims



A current regulator circuit is connected in series with a control device, such as a relay or a saturable reactor, and a direct current power source, across a pair of conductors, adapted to be connected to a telephone line, so that the circuit functions as a pulsing circuit. A control circuit monitors the current flow in the series circuit to render the current regulator circuit momentarily non-conductive to briefly disconnect the power source when the telephone line is open circuited.

3,676,602

TELEPHONE SET IDENTIFICATION SYSTEM

Norman E. Goetchius, and Amin Y. Zaky, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

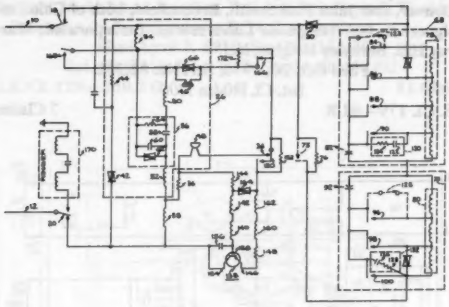
Filed Oct. 26, 1970, Ser. No. 83,699

Int. Cl. H04m 1/50

U.S. Cl. 179—17 A 11 Claims

A telephone set identification system wherein telephones are equipped with circuits that are responsive to a high poten-

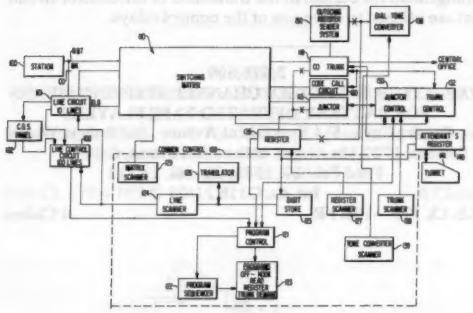
tial signal from the central office (when the telephone is off hook) to generate and transmit a preselected identification signal to the central office.



3,676,603
CODE CALL CIRCUIT FOR PAGING IN A PBX

Ignas Budrys, and Ernest O. Lee, Jr., both of Fairport, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,735
Int. Cl. H04m 3/42
U.S. Cl. 179—18 BF **18 Claims**



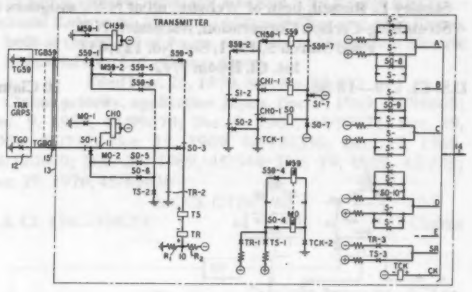
Code call circuit for use with a common control telephone system, particularly a PBX, wherein means is provided to mark the calling line circuit and totally release the code call circuit upon detection of an answer code from the subscriber being paged, so that the common control can connect the subscribers in the normal manner through a junctor circuit.

3,676,604
MULTIPLE TRUNK SIGNAL ARRANGEMENT

James Glenn Whitemyer, Reynoldsburg, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 12, 1970, Ser. No. 63,203
Int. Cl. H04m 3/32
U.S. Cl. 179—18 AB **16 Claims**

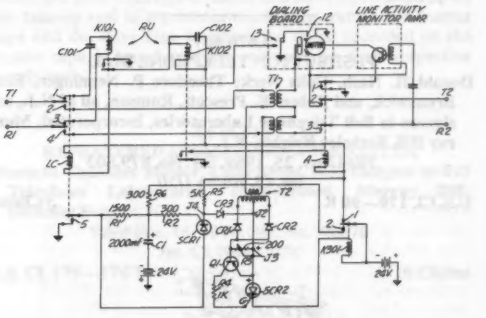
A group of trunk circuits exhibiting a particular signal condition is detected by a respective one of a plurality of detecting circuits associated with a corresponding plurality of trunk circuit groups. The identity of the detected trunk group is encoded, transmitted to a remote point for display purposes and a signal acknowledging correct receipt of the encoded identity is returned. The returned acknowledgment signal is employed to prime the detecting circuit to respond to the appearance of the opposite signal condition at the associated trunk group and, pending receipt of the acknowledgment signal, the detecting circuit is prevented from responding to any change in the signal condition of its associated trunk group.



3,676,605
SPIKE MONITORING APPARATUS

James W. Johnson, Culver City, Calif., assignor to Telephonic Equipment Corporation, Arcadia, Calif.

Filed March 18, 1969, Ser. No. 808,087
Int. Cl. H04m 3/54
U.S. Cl. 179—18 BE **8 Claims**



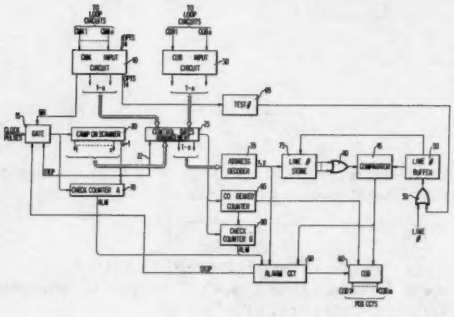
Monitoring apparatus for an electrical circuit, as a telephone circuit, operable to discriminate between various signals and a particular signal different from any thereof and for utilizing the detection of the particular signal to perform a useful function. By way of example, the monitor is useful to discriminate between the various normal signals typically involved in the operation of telephone circuitry and the "on hook" and "off hook" signal inherently generated as an incident to reseating or removing the handpiece relative to its cradle. The resulting spike signal, even though of microsecond duration, is detected and utilized to trigger a circuit effective to disengage automatically central station equipment essential to the operation of the circuit and making it available for immediate use by other telephone subscribers. The monitoring apparatus, conventionally located with the equipment to be released, operates to arm itself automatically as an incident to the establishment of a telephone circuit and includes means for restoring the components to their initial condition automatically in response to opening an established telephone circuit at any terminal thereof.

3,676,606

CAMP-ON BUSY CHECKING AND MONITOR CIRCUIT

Klaus Gueldenpfennig, Penfield; Uwe A. Pommerening, and Stanley L. Russell, both of Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed March 5, 1971, Ser. No. 121,431
Int. Cl. H04m 3/42
U.S. Cl. 179—18 B6 10 Claims



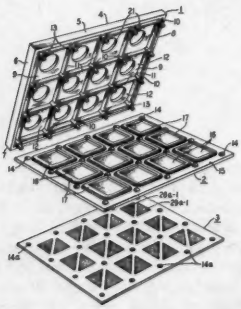
Camp-on busy checking and monitor circuit which permits only a single line to camp-on a given line at one time and limits the total number of camp-on connections through use of a memory providing information concerning the lines which are associated with a camp-on connection.

3,676,607

PUSHBUTTON TELEPHONE DIAL

Donald H. Nash, Colts Neck; Theodore P. Nenninger, East Brunswick, and Robert E. Prescott, Rumson, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 25, 1969, Ser. No. 879,803
Int. Cl. H04m 1/50
U.S. Cl. 179—90 K 3 Claims



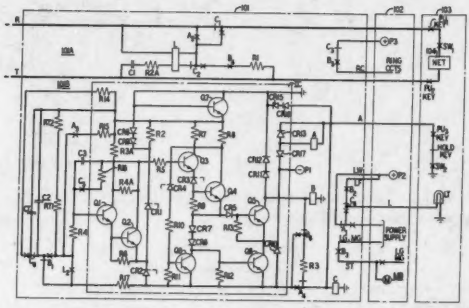
This disclosure describes a telephone station dial having a compliant membrane supporting an array of pushbuttons. A conductive region on the membrane beneath each button contacts, on depression, printed circuit paths associated with two trigger circuits that in turn connect to a specific pair of multifrequency oscillator inputs. The trigger circuits comprise field effect transistors which provide a specified, unvarying output signal in response to the impedance change, either resistive or capacitive.

3,676,608

LINE CIRCUIT FOR A KEY TELEPHONE SYSTEM

David Clayton Goldthorp, Oley, Pa.; Albert David Limifro, Denver, and John Paul Smith, Broomfield, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 20, 1970, Ser. No. 82,272
Int. Cl. H04m 1/00
U.S. Cl. 179—81 R 7 Claims



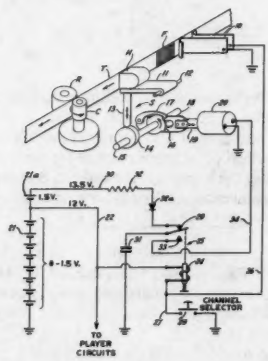
In a key telephone system line circuit employing relays and transistor control and logic circuitry, elimination of the conventional central office ground return path is achieved by substantially isolating a bridged ringing detector relay from the logic and control elements. Breakdown voltage limitations of integrated circuitry are met by the employment of a stacking arrangement for certain of the transistors of the control circuit that are utilized to drive one of the control relays.

3,676,609

CAPACITOR ENERGIZED CHANNEL STEPPING MEANS FOR BATTERY OPERATED TAPE PLAYERS

Jan Robert Coyle, 514 East Ghent Avenue, and Robert Walter Stevens, 1727 Via Alegre, both of San Dimas, Calif.

Filed Feb. 24, 1970, Ser. No. 13,711
Int. Cl. G11b 21/08
U.S. Cl. 179—100.1 R 4 Claims



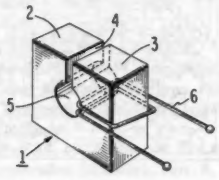
A tape deck and a power source therefor, the tape deck having a pick-up head which is progressively and repetitively shifted through a range of positions relative to a multi-track tape which moves past the head, shifting of the head being accomplished by a solenoid which is in a circuit with a capacitor adapted to energize the solenoid in response to completion of the capacitor-solenoid circuit either manually or automatically.

3,676,610

MAGNETIC HEAD WITH MODIFIED GRAIN BOUNDARIES

Herbert Irwin Moss, Yardley, Pa., and Eric Francis Hockings, Princeton, N.J., assignors to RCA Corporation

Filed April 3, 1970, Ser. No. 25,935
Int. Cl. G11b *5/14*; C22c *39/04*; H01f *1/02*
U.S. Cl. 179—100.2 C 11 Claims



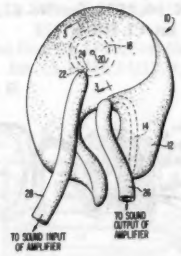
There is provided a transducing, magnetic head for use in magnetic recorder-reproducer systems. The head is fabricated of a material which consists of a majority or first phase of polycrystalline, small grained magnetic alloy which has an abrasion resistant second phase disposed in the grain boundaries throughout the alloy. The volume percent of the first and second phase materials are arranged to provide desired electrical and magnetic performance with prolonged head life through increased resistance to wear.

3,676,611

EARPIECE FOR HEARING AID HAVING SOUND INLET FOR HIGH FREQUENCIES

Stephens, Erwin E., 14-C Via Castilla, Laguna Hills, Calif.

Filed March 13, 1970, Ser. No. 19,271
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 E 6 Claims



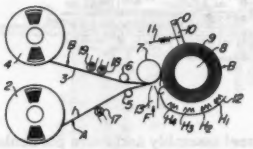
A hearing aid includes an earpiece worn in the ear and a sound amplifier worn externally of the ear. Sound waves impinging on the ear are transmitted through an opening in the outer surface of the earpiece to an inner chamber thereof and thence through a conduit to the sound input of the amplifier. The amplified sounds are fed from the output of the amplifier through a further opening extending through a portion of the earpiece positioned in the external meatus.

3,676,612

CURIE POINT MAGNETIC TAPE DUPLICATING APPARATUS WHEREIN THE MASTER AND SLAVE TAPES ARE WOUND ON A SINGLE TAKE-UP REEL

Fukashi Kobayashi, Hirakata; Mitsuaki Ono, and Akio Kuroe, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 25, 1970, Ser. No. 92,793
Claims priority, application Japan, Dec. 9, 1969, 44/99668; Dec. 9, 1969, 44/99670; Dec. 9, 1969, 44/99671; Dec. 29, 1969, 45/712; Dec. 15, 1969, 44/120336; Dec. 17, 1969, 44/120849; Dec. 29, 1969, 45/344; Dec. 29, 1969, 45/345; Dec. 29, 1970, 45/65610
Int. Cl. G11b *5/86*
U.S. Cl. 179—100.2 E 12 Claims



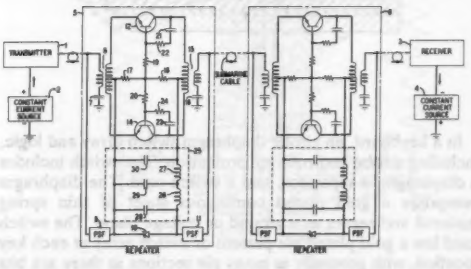
An apparatus for producing a copy of a magnetic tape in which a master tape having a record thereon and a slave tape heated to a temperature at least in the vicinity of the Curie point of a magnetic material coated thereon are continuously taken up on a single take-up reel in such a manner that they are in intimate contact with each other at their magnetic surfaces, and after cooling the master and slave tapes taken up on the take-up reel to a predetermined temperature, the master tape and the slave tape to which the signal recorded on the master tape is transferred are rewound on their respective supply reels.

3,676,613

REPEATERED SUBMARINE CABLE SYSTEM

Sherman Theodore Brewer, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 16, 1970, Ser. No. 98,670
Int. Cl. H04b *3/58*
U.S. Cl. 179—170 T 6 Claims



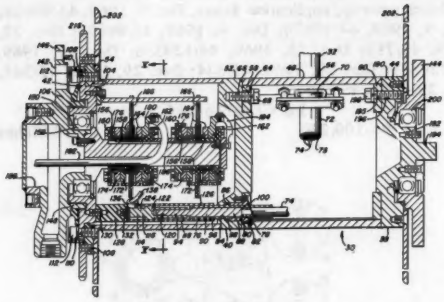
As we go to wider bands for submarine cable systems, it becomes difficult to achieve the required power output in undersea repeaters. Two key limitations in determining signal power output capability are the deliverable d.c. power and the temperature rise in the transistors. The present invention is directed to a repeater which employs a class B, rather than the usual class A, output amplifier with energy storage and regulation to overcome both limitations.

3,676,614

CABLE REEL

Victor H. Garmong, R.D. #1, Kennerdell, Pa.

Filed May 28, 1970, Ser. No. 41,250
Int. Cl. H01r 39/00; H02g 11/02
U.S. Cl. 191—12.2 12 Claims



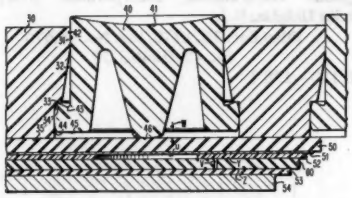
A cable reel assembly and more particularly a cable reel assembly of a type used to carry electrical trailing cable for a shuttle car and which reel assembly is provided with means which enable the rapid assembly and disassembly thereof.

3,676,615

PUSHBUTTON KEYBOARD SWITCH ARRAY AND ASSOCIATED PRINTED CIRCUIT LOGIC CARDS

Fritz S. Wiedmer, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 13, 1970, Ser. No. 54,300
Int. Cl. H01h 9/26, 13/52
U.S. Cl. 200—1 R 12 Claims



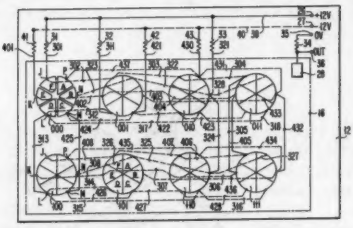
In a keyboard, an elastic diaphragm switch array and logic, including strobe and rollover protection. The switch includes a diaphragm, a separator, and a switch card. The diaphragm comprises a gold plated continuous sheet of thin spring material and serves as a ground or voltage plane. The switch card has a gold plated pie pattern or switch array at each key location, with generally as many pie sections as there are bits in the code to be produced. Each pie section is wired directly by double sided wiring and through-holes in the switch card to the appropriate output code pin. No decoding or encoding logic is required to produce the code. Strobe logic is provided for assuring that all pie sections have made contact with the diaphragm and rollover protection logic is provided for assuring that only one key is depressed. A key button is provided for pressing the diaphragm through the separator to make contact with the switch card pie pattern.

3,676,616

EDS SERIAL SWITCH ARRAY

Fritz S. Wiedmer, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,864
Int. Cl. H01h 3/12
U.S. Cl. 200—5 R 10 Claims



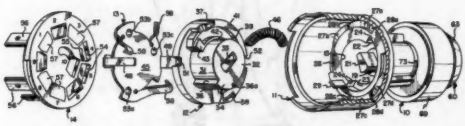
In a keyboard, an elastic diaphragm switch array providing mechanical strobe and rollover protection, and/or a serial signal output. The switch includes a diaphragm, a separator, and a switch card. The diaphragm comprises a gold-plated continuous sheet of thin spring material and serves as a ground or voltage plane or voltage adder. The switch card has a conductive switch array (or pie section pattern) at each key location and may have twice as many pie sections as there are bits in the code to be produced or voltage transitions desired in the output, with additional service pie sections as desired. Each pie section is wired directly by double-sided wiring and through-holes in the switch card to the appropriate output code pin, a positive or negative voltage source, or other connection. A key button and distributor is provided for pressing the diaphragm smoothly through the separator to make contact with the corresponding switch card pie section. In each pie pattern, at least one of the pie sections is offset from the center of contact of the key button such that, as the key button is actuated and the diaphragm pressed through the separator, that pie section makes contact at a different point in time to provide a serial code signal output, or provide such service functions as strobe, rollover protection, switch battery power, or the like.

3,676,617

SWITCH HAVING SPIDER-SHAPED CONTACT CARRIER

Martin P. Miller, New York, N.Y., assignor to General Automotive Specialty Company, Inc., Carlstad, N.J.

Filed Oct. 16, 1970, Ser. No. 81,451
Int. Cl. H01h 1/28
U.S. Cl. 200—44 13 Claims



A movable contact shorting device is disclosed which may constitute an electrical component of a switch. The device is interposed between a fixed contact member and a movable actuator and includes a contact plate having a plurality of contact portions protruding from one surface and engageable with corresponding contact elements on the fixed member. A plurality of spring fingers integral with the plate depend longitudinally therefrom to bear against the actuator. The fingers may be formed from arcuate portions of the plate and serve to bias the plate against the fixed member. The contact portions may be arranged in any convenient pattern depending upon

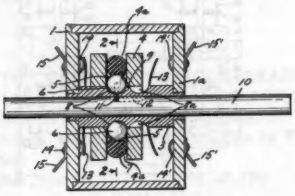
the requirements of the switch circuit. An open-ended enclosure or boot is sealably mountable on the switch to shield against adverse weather conditions and ambient foreign matter. The boot includes a transverse portion to overlie part of the switch and contains a passage through this portion having resilient walls to form a substantially weather-proof seal. The walls separate under pressure, as for example when a key is inserted, but conform to the shape of the key so as to maintain the seal. The boot may be rotatably mounted on the switch to turn with the key thereby minimizing any deformation tending to interfere with the seal.

3,676,618

PUSH-BUTTON SWITCH

Carl Emil Bartens, deceased, late of Copenhagen, Denmark; by Karl E. Bartens, and by Bjoern Bartens, both of Moerke, Denmark (heirs), assignors to Kristian Krog Sorensen, Sonderbro, Aalborg, Denmark

Filed March 25, 1971, Ser. No. 128,096
Claims priority, application Denmark, Nov. 8, 1968, 5437
Int. Cl. H01h *15/18*
U.S. Cl. 200—77 **8 Claims**



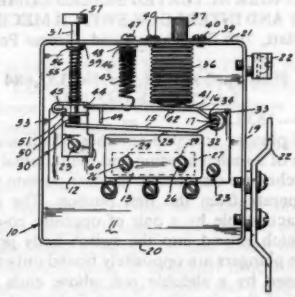
A snap acting switch includes a pair of spring contact arms carried at one end of a drum mounted for slidable movement on a stationary member and movable by an external force to a switch-closed position in which the spring contact arms are in pressure engagement with fixed contacts located exteriorly of the drum. The drum is held in switch-closed position against the spring pressure of the engaged contacts, by means of a plurality of balls located in through radial bores in the drum, and recessed seats in the stationary member receiving said balls. Biasing means, such as a rubber ring, is mounted on the drum and maintains said balls in seated positions in the recessed seats.

3,676,619

MANUAL OVERRIDE PRESSURE OPERATED SWITCH

Melvin S. Hook, La Salle, Ill., assignor to Burns Machine Co., Ottawa, Ill.

Filed Dec. 14, 1970, Ser. No. 97,783
Int. Cl. H01h *35/32, 35/26*
U.S. Cl. 200—81 H **8 Claims**



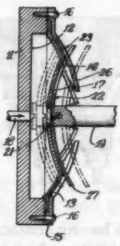
Pressure operated switch in which an expansible bellows actuates a switch arm in a switch operating direction upon predetermined pressure conditions and a manually operable plunger is guided to engage and actuate the switch arm independently of the bellows, to effect operation of the switch arm manually. A latching member engaged with the plunger holds the switch arm in a switch closing position and is released by operation of the bellows when moving the switch arm in a switch closing direction.

3,676,620

ADJUSTABLE PRESSURE RESPONSIVE TRANSDUCER

Edward E. Modes, 1417 Shawnee Trial, Deerfield, Ill.

Filed Nov. 18, 1970, Ser. No. 90,740
Int. Cl. H01h *35/34, 35/26*
U.S. Cl. 200—835 **15 Claims**



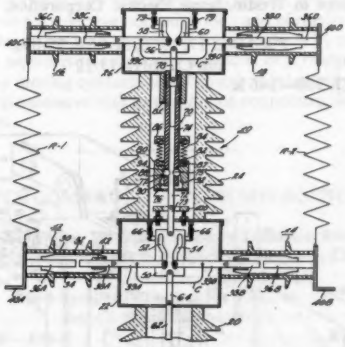
A pressure responsive transducer having means for adjusting the effective back-up of a diaphragm to provide infinite adjustability in the output signal produced by movement or force of the diaphragm in response to pressure directed thereagainst.

3,676,621

HIGH VOLTAGE ELECTRICAL CIRCUIT BREAKER WITH PREINSERTION RESISTOR DURING CLOSING

Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 28, 1971, Ser. No. 147,789
Int. Cl. H01h *33/16*
U.S. Cl. 200—144 AP **16 Claims**



A high voltage circuit breaker assembly adapted to reduce voltage surges which occur on prestriking of the switch during the closing stroke, such as when switching a capacitor bank onto a high voltage distribution line. The breaker assembly includes a first and a second breaker connected in parallel paths. Each breaker may be a vacuum interrupter. An operating mechanism causes the first breaker to close in series with a resistor during the closing stroke of the operating mechanism

and during a later phase of the closing operation the operating mechanism causes closing of the second breaker to bypass the resistor. The operating mechanism includes means for maintaining the first breaker which is in series with the resistor open during the opening operation of the circuit breaker assembly, whereby to insure that the resistor is not in circuit during the opening operation so that the circuit is opened by the second breaker.

3,676,622

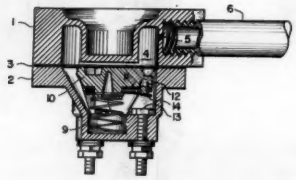
NON-SPARKING ELECTRICAL SWITCH

Joseph S. Brumbelow, 35 Winn Street, Burlington, Mass.

Filed May 28, 1971, Ser. No. 148,085

Int. Cl. H01h *33/16*

U.S. Cl. 200—144 AP **2 Claims**



An electrical switch having contacts which make and break is provided with an inhibitor which inhibits sparking between the contacts. The switch has a movable contactor whose arms carry protruding contacts disposed to be brought against the fixed contacts of the switch. The inhibitor is mounted to move with the contactor and has resilient arms which diverge from the contactor arms when the switch is open. The inhibitor arms have apertures for receiving the protruding contacts of the contactor. The inhibitor's resistance is large relative to the resistance of the contactor. Closure of the switch causes the inhibitor arms to be first brought against the fixed contacts and then causes the divergence of the arms to decrease until the protruding contacts extend into the apertures and close upon the fixed contacts.

3,676,623

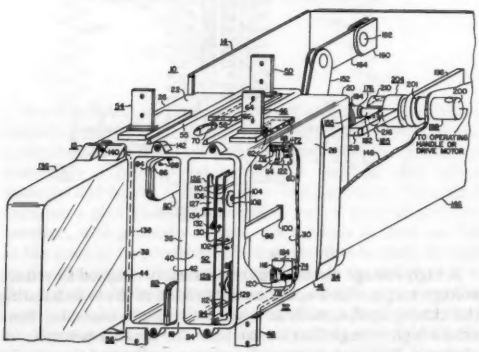
CIRCUIT INTERRUPTER

Robert H. Hollister; Garlington C. Wilburn, both of South Boston, Va., and Kurt G. Green, Golden Bridge, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1970, Ser. No. 99,092

Int. Cl. H01h *33/12*

U.S. Cl. 200—146 R **12 Claims**



A circuit interrupter including conductive blade members mounted for movement relative to circuit contacts, with the blade members and circuit contacts disposed in a housing formed of a cast resinous insulation system. Substantially Z-shaped terminals are partially embedded in the cast resinous insulation system, to which the circuit contacts are fixed.

3,676,624

GAS BLAST POWER CIRCUIT BREAKER FOR HIGH OPERATING CURRENTS

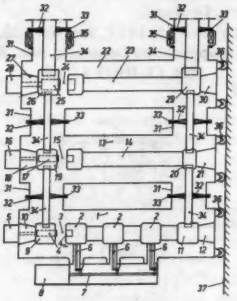
Gerhard Mauthe, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Sept. 24, 1970, Ser. No. 75,148

Claims priority, application Switzerland, Oct. 10, 1969, 15236/69

Int. Cl. H01h *33/54*

U.S. Cl. 200—148 B **3 Claims**



An electrical power circuit breaker assembly is constituted by a plurality of parallel arranged gas-filled tubular enclosed modules which respectively contain the various operating components. A plurality of power switching units and a voltage isolating switching unit, all connected in series constituting one such module, are located in one of the tubular enclosures and one or more of the other tubular enclosures contain other auxiliary modules such as a conductor bar which is connectible electrically in parallel with the series-connected power switching units through a disconnect switch to increase the rated current carrying capacity of the circuit breaker module during the period when the breaker contacts are closed by shunting current away from the latter. The parallel arranged tubular enclosed modules are interconnected at their ends by other tubular enclosure parts which enclose the necessary conducting members for electrically interconnecting the various modules and these latter enclosure parts include bulkhead insulators for sealing off the various parallel arranged gas-filled tubular enclosed modules each from the other.

3,676,625

DUAL PLUNGER ACTUATED SEALED COMBINATION SAFETY AND INTERLOCK SWITCH MECHANISM

Leland F. Blatt, 790 Shoreham Road, Grosse Pointe Woods, Mich.

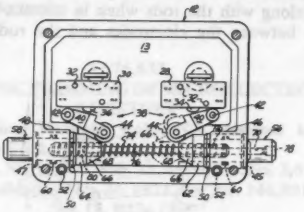
Filed April 9, 1971, Ser. No. 132,684

Int. Cl. H01h *3/42, 9/24*

U.S. Cl. 200—153 LA **5 Claims**

A pair of plunger actuated switches which are disposed in one portion of a sealed housing and the terminal connections for the switches are disposed in another portion of the sealed housing separate from the first portion. The switches are selectively actuatable by a pair of opposite co-axial aligned plungers which extend into the switch body portion of the housing; the plungers are oppositely biased outwardly and are interconnected by a slidable rod whose ends are inserted within both of the plungers in such fashion that, when one plunger is depressed the opposite plunger is locked against actuation; the inner ends of both plungers are chamfered and in contact with rollers on the switch actuation levers so that

when either plunger is depressed the switch actuator roller rides up on the chamfered end of the plunger to close switch contacts within each of the switches; the terminal strip in the terminal body portion of the housing is provided with a plurality of terminals; the terminal strip can be independently removed from the housing for rewiring or replacement without disturbing the arrangement in the plunger body portion of the housing.

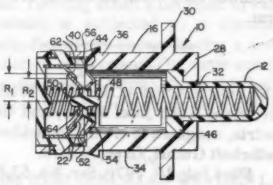


3,676,626

PUSHBUTTON SWITCH WITH LIQUID DRAINAGE FACILITATING CAGE BODY, AND DIAPHRAGM SEALING AND ACTUATING MEANS

Edward B. Mitchell, Belmont, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed June 15, 1970, Ser. No. 46,390
Int. Cl. H01h *13/06*
U.S. Cl. 200—159 R **4 Claims**



This is a switch which includes a flexible diaphragm adapted to flex when actuated by a plunger spring thereby providing both a water-proof seal and part of the actuating system of the switch. The switch body is formed of an upper circular member having an axial hole formed therethrough and a lower circular member having an axial hole formed therethrough, the two members connected by a pair of legs which are inspaced opposed relation to each other provoding an open cage like configuration which will allow water to drain outwardly and assist in waterproofing the switch.

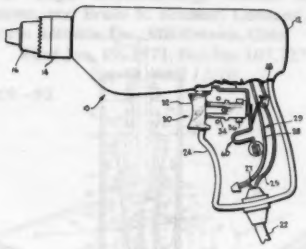
3,676,627

SWITCH MECHANISM WITH UNITARY BIASING, CONTACT, AND DETENT SPRING

Reynold Happe, Jefferson City, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed April 20, 1971, Ser. No. 135,618
Int. Cl. H01h *13/08, 13/52*
U.S. Cl. 200—159 A **3 Claims**

A switch mechanism having an actuator or trigger supported to move within a housing between inner and outer positions corresponding to switch on and switch off conditions, separated electrical posts or terminals fixed on the housing spaced from but adjacent the trigger, and a single spring leaf element supported by the housing and urging the trigger to its outer switch off position, the spring leaf element having a detent portion that cooperates with an appropriate detent stop on the housing to releasably hold the trigger in said off position, and the spring leaf elements also having a contact spaced from the electrical terminals in the trigger off position but adapted to engage the terminals in the trigger on position for completing an electric circuit across the terminals.

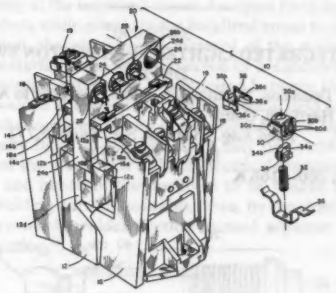


3,676,628

REVERSIBLE MOVING CONTACT ARRANGEMENT

Hugh Kane, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 5, 1970, Ser. No. 61,190
Int. Cl. H01h *3/00, 9/00*
U.S. Cl. 200—166 BC **10 Claims**



A moving contact arrangement, for a relay, for example, which allows for selective normally open and normally closed contact orientation with respect to fixed contacts by rotative movement between two opposite positions of a bridging bar carrying the moving contacts about an axis substantially parallel to and co-extensive with a straight line connecting the moving contacts.

3,676,629

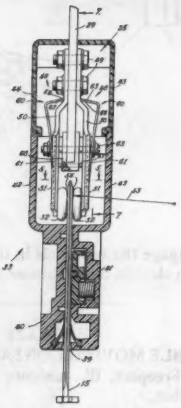
SWITCH CONSTRUCTION WITH NON-BOUNCE CONTACTS

David Maurice Evans, Wheeling, and Roy Theodore, Riverside, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed April 5, 1971, Ser. No. 131,160
Int. Cl. H01h *1/42, 1/50*
U.S. Cl. 200—166 E **8 Claims**

The switch blade is pivoted at high speed into and out of engagement with spring biased contacts having contact surfaces of large radius. The mass of the contacts and the spring forces applied thereto are so related to the velocity of the switch blade that bouncing of the contacts is minimized and the circuit is completed so rapidly that arcing is also minimized with normal current flowing only after actual engagement of the contacts by the switch blade. The contacts are mounted at the offset distal ends of relatively rigid contact plates which are secured to opposite sides of a terminal bracket. L-shaped

springs bias the contact plates and contacts into engagement with the switch blade. An equalizer extends through the springs and contact plates and through an insulating support



bracket that carries a spacing pin to limit movement of the contacts toward each other. The contact assembly is enclosed in an insulating arc extinguishing housing.

3,676,630

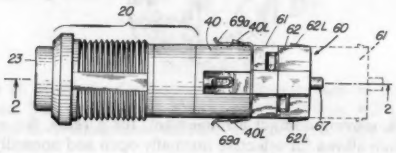
INTEGRATED LIGHTED PUSH BUTTON SWITCH DEVICE

John J. Dennison, Southington, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Aug. 13, 1969, Ser. No. 849,771

Int. Cl. A01h 9/26

U.S. Cl. 200—168 K **2 Claims**



A push-button switch-actuating mechanism is integrated with one or more switch units by adding on the switch unit or units to the actuating mechanism. Detachable connections between the actuating mechanism and the unit or units enable one or more units to be added on in tandem. Latch means in the actuating mechanism enables it to be maintained in actuated position on one operation and released by the next operation. Latching and releasing springs of hairpin type constitute a novel part of the actuating mechanism.

3,676,631

WELDING MACHINE AND METHOD

Josef Ritter; Hans Gott; Klaus Ritter, and Gerhard Ritter, all of Styria, Austria, assignors to EVG Entwicklungs-und Verwertungsgesselschaft GmbH, Graz, Styria, Austria

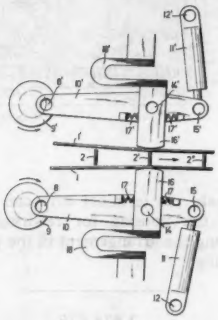
Filed Oct. 2, 1970, Ser. No. 77,528

Claims priority, application Austria, Oct. 6, 1969, A 9411/69

Int. Cl. B23k 11/00

U.S. Cl. 219—56 **5 Claims**

The invention relates to the welding of transverse rungs between longitudinal rods to form steel reinforcement, for concrete, known as "Bi-Steel." The rods are fed convergently and continuously through a resistance welding machine, the transverse rungs being successively positioned between the rods. A pair of welding electrodes are thrust from opposite sides against the rods to clamp each successive rung in position during welding by sequential spot welding. Each electrode travels around a closed path such that the electrode travels along with the rods when in contact therewith. The contact between the electrodes and the rods is preferably



rolling contact so that any discrepancy between the speeds of the rods and of the electrodes causes rolling rather than sliding of the electrodes along the rods.

The electrodes may be rollers mounted on rotating carrier discs between which the rods pass. In one example each disc carries twelve roller electrodes each urged by a spring radially outwardly of the disc. In another example two electrodes are used each mounted on a beam extending between a crank and a rocking arm.

3,676,632

PROCESS FOR MANUFACTURING WELDED MESH

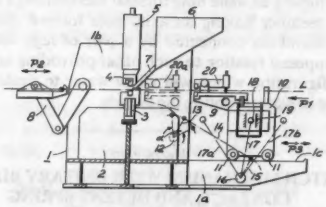
Klaus Ritter; Hans Gott; Josef Ritter, and Gert Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungsgesellschaft GmbH, Graz, Austria

Filed July 10, 1970, Ser. No. 53,856

Claims priority, application Austria, July 15, 1969, A 6809/69

Int. Cl. B23k 1/00

U.S. Cl. 219—58 **15 Claims**



The invention relates to the manufacture of welded wire mesh for use as concrete reinforcement. The mesh is manufactured by advancing an array of longitudinal wires through a welding machine having a row of electrodes and welding transverse wires to the array by means of resistence welding. To avoid embrittlement of the material of the wires in the region of the weld due to rapid temperature changes, preheaters are provided for preheating the longitudinal wires where the welding is to take place. The preheaters are movable mounted and preheat the longitudinal wires during at least a part of their advance through the machine.

In one example the longitudinal wires are advanced intermittently past stationary welding electrodes and the pre-

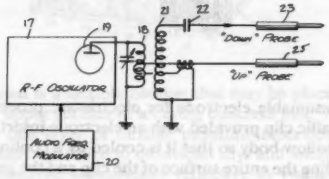
heaters alternately advance with the wires and then return to an initial position. In a second example the longitudinal wires are advanced continuously through the machine and both the electrodes and the preheaters alternately advance with the wires and return to initial positions. The alternating advance and return of the preheaters may be out of phase with respect to that of the electrodes.

3,676,633

ELECTRONIC TRIMMING OF MICROELECTRONIC RESISTORS

Alfonso Di Mino, Woodcliff Lake, N.J., assignor to ADM Tronics, New York, N.Y.

Division of Ser. No. 13,697, Feb. 24, 1970, Pat. No. 3,617,684.
This application May 26, 1971, Ser. No. 146,901
Int. Cl. B23p 1/08
U.S. Cl. 219—69 C 4 Claims



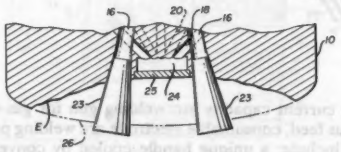
An electronic technique for changing the ohmic values of microelectronic resistors formed on a substrate, so as to either increase or decrease the values thereof without affecting their physical qualities. To bring about a decrease in value, the surface of the resistor is subjected to a corona discharge produced by radio-frequency energy having a low-frequency amplitude modulation component. The same energy source is used to effect an increase in ohmic value, this being effected by passing a heating current through the body of the resistor.

3,676,634

METHOD OF REBUILDING AN OXYGEN LANCE

Grant A. Oakes, R.D. #4, Cortland, Ohio

Filed Dec. 18, 1970, Ser. No. 99,570
Int. Cl. B22d 19/10; B23k 9/04
U.S. Cl. 219—76 4 Claims



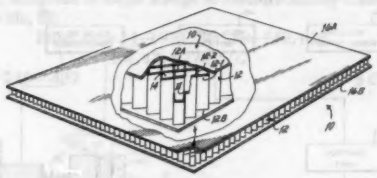
A method of rebuilding oxygen lance to improve the rebuilt structure is disclosed in connection with oxygen lances such as used by the steel industry in connection with introducing oxygen into open-hearth or basic oxygen furnaces containing molten steel. An oxygen lance having tubular coolant channels and an oxygen supply channel with an apertured brass casting forming the oxygen delivery tip is rebuilt to form a coolant chamber centrally of the tip of the lance and the burned away metal of the tip replaced by welding techniques. Coolant passageways in the tip portion of the lance are placed in communication with the coolant chamber for an improved cooling effect.

3,676,635

METHOD AND APPARATUS FOR WELDING HONEYCOMB CORE PANEL AND THE LIKE

George A. Page, Reynoldsburg; Robert R. Rathbun, Middletown, and Bruce E. Kramer, Loveland, all of Ohio, assignors to Aeronca, Inc., Middletown, Ohio

Filed Jan. 19, 1971, Ser. No. 107,727
Int. Cl. B23l 11/10
U.S. Cl. 219—92 3 Claims



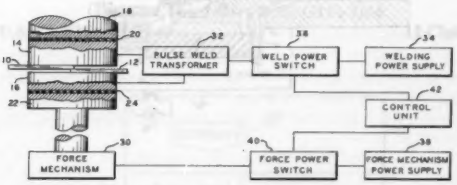
Process of welding, and apparatus therefor, in which two members to be welded are positioned relative to each other in an orientation susceptive of establishing localized zones of high electrical field intensity, which zones also exhibit high electrical resistance relative to the resistance of the individual members. An electrical potential is applied between the positioned members by electrodes in contact therewith to produce a spark discharge in the localized zones of high electrical field intensity and for a period sufficient to produce plasticity in the members only at the localized zones. An upset force is applied to the members while plastic in the localized zones to unite, by forging action, the plastic weld material of the members. A dielectric material, ultimately subjected to breakdown by the welding potential, preferably is positioned between the members to be welded at the zones of high electrical field intensity, enhancing the localized nature of the concentrated high electrical intensity field. A magnetic field may be established in the region of the electrodes to limit electrical shunting of the electrodes, and hence of the members to be welded through which the welding current desirably flows, by the shunting action of a previously welded section located adjacent the yet unwelded section.

3,676,636

ARTICLE OF MANUFACTURE AND METHOD OF MAKING THE SAME

David G. Anderson, Bloomfield Hills, Mich., assignor to Quanta Welding Company, Troy, Mich.

Filed Oct. 29, 1970, Ser. No. 85,105
Int. Cl. B23k 11/04
U.S. Cl. 219—117 R 6 Claims

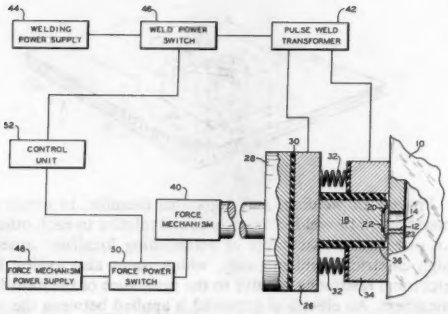


An article of manufacture consisting of at least two contacting parts of electrically conductive material disposed in overlapping relation having a solid state pulse resistance weld at the faying interface between the parts interconnecting the same into an integral unitary structure. The method of producing the unitary structure involves the disposition of the parts to be welded together in overlap relation followed by a timed phased application of a force pulse and an electrical energy pulse to the assembled parts to achieve the desired structure.

3,676,637
APERTURE COVER AND METHOD OF MAKING THE SAME

David G. Anderson, Bloomfield Hills, Mich., assignor to Quanta Welding Company, Troy, Mich.

Filed Oct. 15, 1970, Ser. No. 80,921
Int. Cl. B23k *11/04*
U.S. Cl. 219—117 R 7 Claims

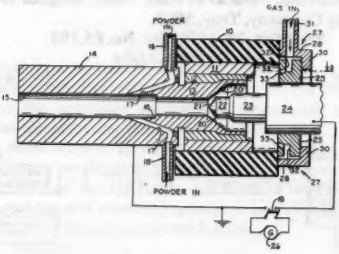


The method of producing the aperture cover wherein the parts being integrated are disposed in juxtaposed position followed by a time phased application of a force pulse and an electrical energy pulse to the assembled parts to produce a solid state resistance weld at the faying interface.

3,676,638
PLASMA SPRAY DEVICE AND METHOD

Mille Stand, New York, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Continuation-in-part of Ser. No. 834,292, June 18, 1969, abandoned. This application Jan. 25, 1971, Ser. No. 109,369
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P 18 Claims

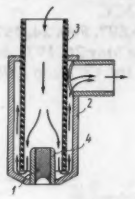


An improved plasma spray device which deposits heat fusible material onto a substrate to form a continuous film. The plasma is effected by passing an ionizable gas between two electrodes which support an electric arc. The material to be deposited on the substrate is added to the plasma during its passage through a large nozzle. The gas is directed into a helical path by a plurality of conduits formed in a large disk. The material rides on the cylindrical surface of the revolving gas before being ejected from either a nozzle with a constant interior diameter or a gradually changing diameter.

3,676,639
NON-CONSUMABLE ELECTRODE FOR ELECTRIC-ARC PROCESS

Eduard Migranovich Esiban, and Mikhail Evgenievich Danchenko, both of Kiev, U.S.S.R., assignors to Institut Elektrosvarilmeni E. O. Patona, Kiev, U.S.S.R.

Continuation of Ser. No. 819,318, April 25, 1969, abandoned. This application Sept. 8, 1970, Ser. No. 70,483
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 R 9 Claims

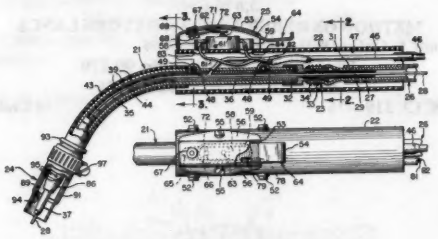


A non-consumable electrode for electric-arc processes, in which a metallic clip provided with an electrode insert is positioned in a hollow body so that it is cooled by a cooling medium surrounding the entire surface of the clip and the insert.

3,676,640
ARC WELDING GUN

Arthur A. Bernard, Beecher, and Richard A. Bernard, Flossmoor, both of Ill., assignors to Dover Corporation, New York, N.Y.

Division of Ser. No. 650,051, June 29, 1967, Pat. No. 3,469,070. This application June 5, 1969, Ser. No. 840,583
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 4 Claims

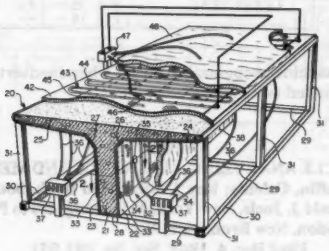


A high current capacity arc welding gun for gas-shielded, continuous feed, consumable electrode arc welding processes. Features include: a unique handle cooled by convection air flow; an improved head assembly having a unique electrical insulating ion impervious shield for preventing destructive arcing to the gas nozzle, an improved shielding gas flow path through the head assembly which additionally cooperates with the ion impervious shield to prevent gas nozzle arcing, a unique current contact tip which attaches to the head assembly by a novel curved wedge clamping concept and which is produced by an improved, versatile, and inexpensive method of manufacture that increases the copper density and refines the grain structure in the current contact tip for greater life; an improved gooseneck lining for longer life and reduced friction; a heat protected control switch assembly of rugged construction and unique trigger operation; and an improved welding cable connection assembly.

3,676,641
APPARATUS FOR ASSISTING IN THE CURING OF CONCRETE AND FOR HEATING

Wallace A. Olson, 500 South Kiwanis Avenue, Apt. 315, Sioux Falls, S. Dak.

Division of Ser. No. 770,163, Oct. 24, 1968. This application Jan. 15, 1971, Ser. No. 106,798
Int. Cl. H05b 1/00
U.S. Cl. 219—200 1 Claim

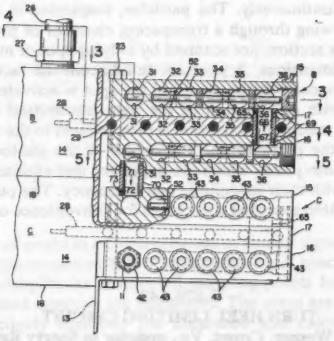


Disclosed is a flexible blanket that may be placed over the exposed upper surface of a curing concrete mix. The blanket includes one layer of flexible moisture-impervious material substantially reflective to ultraviolet rays and another layer of flexible material substantially reflective to visible light; also preferably included in the blanket is an electrically-energized flexible heating element that produces heat uniformly over the surface of the bottom layer.

3,676,642
MODULAR APPARATUS FOR HEATING CIRCULATING COATING MATERIAL

Samuel R. Rosen, Lorain; Alvin A. Rood, Westlake, and Donald R. Scharf, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed April 17, 1970, Ser. No. 29,409
Int. Cl. H05b 3/04, 3/70
U.S. Cl. 219—301 4 Claims

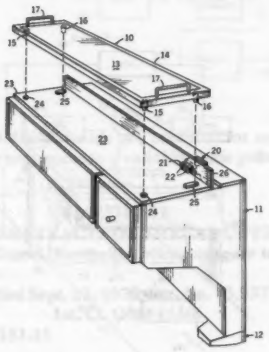


A modular apparatus for heating circulating liquids such as paint. The apparatus has a heater module that may be heated internally to a high temperature by electrical energy for example, and one or more interchangeable circuit modules having a relatively high thermal conductivity and positioned face to face against the heater module in heat transfer relationship therewith. Each circuit module has a group of generally parallel internal passages formed for example during extrusion and interconnected in pairs at their ends so as to define a sinuous circuit for liquid between inlet and outlet ports. One circuit module may be secured on each opposite face of the heater module with the two respective groups of passages interconnected through the interposed heater module to form a continuous series connection between the two circuit modules. Two or more such units may be ganged with a series circuit connection to enlarge the circuit and increase the volumetric capacity.

3,676,643
REMOVABLE WARNING TRAY ASSEMBLY

Elmer E. Vocke, Belleville, and Albert L. Baltz, Millstadt, both of Ill., assignors to Eagle Range & Manufacturing Company, Belleville, Ill.

Filed June 11, 1971, Ser. No. 152,148
Int. Cl. F27d 11/2
U.S. Cl. 219—432 5 Claims

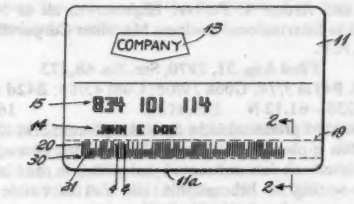


The assembly includes a base structure and an electrically heated, removable warming tray, the base and the tray each having compatible, interconnecting electrical connectors. The tray includes downwardly projecting legs and the base includes a support deck providing grooves receiving the legs to align and guide the tray into electrical connection with the base structure. The base includes front stops engagable by the legs to preclude inadvertent uncoupling of the tray and to retain the tray in position relative to the base

3,676,644
CODED DOCUMENT AND SYSTEM FOR AUTOMATICALLY READING SAME

Angelo Vaccaro, Port Washington, and Harold F. E. Dixon, Douglaston, both of N.Y., assignors to Columbia Controls Research Corporation, Glen Cove, N.Y.

Filed March 5, 1970, Ser. No. 16,858
Int. Cl. G06k 7/08, 19/06; G11b 5/68
U.S. Cl. 235—61.11 D 11 Claims



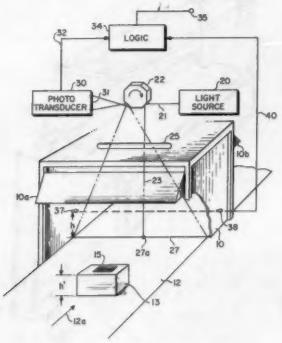
A document such as a credit card formed with magnetizable indicia in the form of short and long individual bars intermingled according to a code to produce, when read by a system having a magnetic reading head, an electrical representation of the indicia to enable automatic identification of the card.

The document can be passed beneath the reading head over a wide range of speeds thereby enabling the use of an inexpensive reading system. When the document is a plural layer credit card, the code is formed on an inner surface of the card to prevent erosion and alteration of the code.

3,676,645
DEEP FIELD OPTICAL LABEL READER INCLUDING MEANS FOR CERTIFYING THE VALIDITY OF A LABEL READING

William E. Fickenscher, 1229 Knightswood Road, Baltimore, Md., and James E. Harris, 2 Harmon Road, Owings Mills, Md.

Filed April 9, 1970, Ser. No. 27,051
Int. Cl. G06k *7/14;* **G01d** *5/36;* **H04n** *3/34;* **G06k** *9/04*
U.S. Cl. 235—61.11 E **31 Claims**



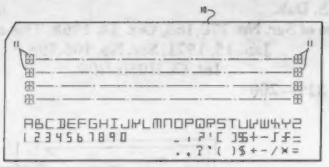
A label reader includes a rotating faceted mirror which scans a beam from a low power gas laser repetitively across a conveyor. The beam path is within the viewing angle of a phototransducer. A package having a specially marked label thereon which passes through the beam excites the phototransducer in response to the label markings. The light received by the photosensor will thus be modulated in accordance with the label markings as scanned. The output of the phototransducer is thus a pulse train which is analyzed in a logic circuit to determine first that a label is being read and second to determine the validity of informational content on the label. Extreme depth of the reader field is provided by the laser which provides a coherent non-dispersive light source and additionally by a sensor which detects the distance of the label being read from the label reader and modifies the logic circuitry in accordance therewith.

3,676,646
DOCUMENT WITH CHEMICALLY DEVELOPABLE PRECISELY DEFINED ALPHANUMERIC CHARACTERS

Donald W. Carlsen, Princeton Junction; John J. Kotla, Cranbury, and Arden A. Parker, Hightstown, all of N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,273
Int. Cl. B41m *3/14;* **G06k** *19/06;* **C08f** *45/66;* **B42d** *15/00*
U.S. Cl. 235—61.12 N **16 Claims**

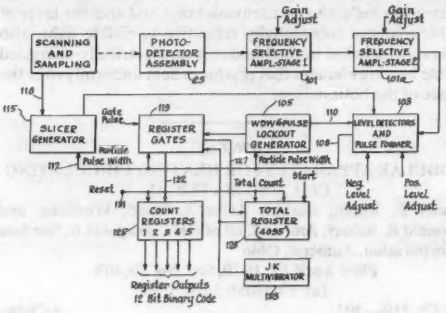
A document processable in optical alphanumeric character readers has a plurality of identical constraint character patterns printed on an untreated substrate in an improved moisture-setting or lithographic ink that is visible to the human eye as a hand printing guide to the operator but not machine-recognizable until selectable portions of the pattern are developed by a developing solution applied by a pen to create a desired one of a plurality of alphanumeric characters of an intensity recognizable by such a machine. The discontinuous pattern configuration assures sharply defined distinctive machine-recognizable characters without undesirable feathered edges or "tics." The highly reflective developer provides no machine-recognizable image when inadvertently applied to uninked areas of the substrate.



3,676,647
PARTICLE ANALYZING APPARATUS AND METHOD

Robert Staffin, Colonia; Roy J. Ricci, Red Bank, both of N.J., and Ronald J. Juels, New York, N.Y., assignors to Procedyne Corporation, New Brunswick, N.J.

Filed Dec. 4, 1969, Ser. No. 881,951
Int. Cl. G06m *11/04*
U.S. Cl. 235—92 PC **19 Claims**



On-line, real-time particle analyzing and counting apparatus operating continuously. The particles, suspended in a fluent medium flowing through a transparent chamber of pre-determined cross section, are scanned by a flying spot of minimum practical dimensions. A photodiode adjacent the face of the chamber opposite impingement of the spot is activated in accordance with interruption of the light transmitted through the flowing medium. Activation is proportional to the size and density of the particles and the output of the photodiode is translated into pulses which are measured and counted in accordance with their magnitude and frequency. The pulses are grouped within specified size ranges for convenience of counting.

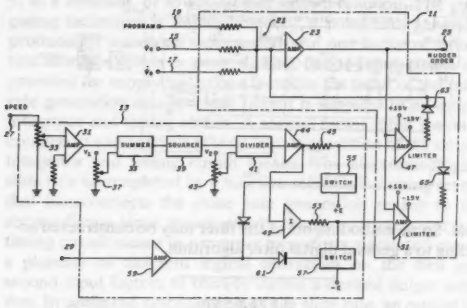
3,676,648
TURN HEEL LIMITING CIRCUIT

Charles R. Wesner, Crozet, Va., assignor to Sperry Rand Corporation

Filed May 4, 1971, Ser. No. 140,168
Int. Cl. B63h *25/04;* **G05b** *13/02*
U.S. Cl. 235—150.2 **6 Claims**

Heeling of a ship during a turning maneuver is restricted to a safe value in accordance with the ship's speed and heading rate. A limit computer accepts a signal indicative of the ship's speed and provides a rudder angle limiting signal which is a function of the reciprocal of the square of the ship's speed. The polarity of a second signal representing the rate-of-change of the ship's heading is used to limit only those rudder angles that would decrease the turning radius. Rudder order

command signals are ordinarily applied to the ship's steering mechanism without alterations. A command signal calling for



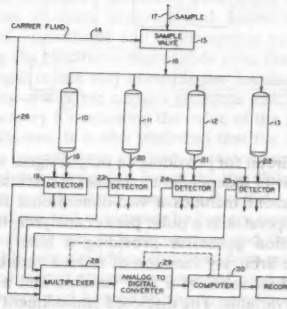
an excessive rudder angle, however, is limited to the value of the rudder angle limiting signal.

3,676,649

SIGNAL ANALYSIS AND RECORDING

Marvin C. Burk, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 8, 1970, Ser. No. 35,840
Int. Cl. G01n *31/08*; G06f *15/34*
U.S. Cl. 235—151.3 **3 Claims**



Areas of peaks in a chromatogram or similar signal are computed from measurements of the amplitudes at spaced time intervals. Amplitudes at selected sampling points between the spaced time intervals are calculated. The areas are computed by selectively summing the measured and calculated amplitudes.

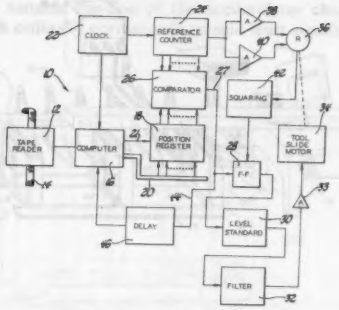
3,676,650

NUMERICAL CONTROL SYSTEM USING POSITION NUMBER GENERATOR

Hubert B. Henegar, Detroit, Mich., assignor to The Bendix Corporation

Filed Oct. 5, 1970, Ser. No. 77,770
Int. Cl. G05b *19/30*
U.S. Cl. 235—151.11 **17 Claims**

A variable phase signal generator for driving a phase analog loop in a numerical control system wherein a computer responds to program data to output position number



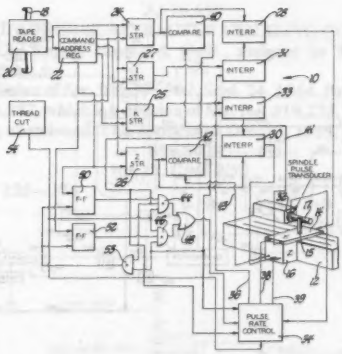
sequences and digital means are provided for converting the numbers in the sequences to a variable phase pulse train.

3,676,651

RAPID RETRACT FOR THREAD CUTTING

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation

Filed Sept. 21, 1970, Ser. No. 73,937
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.11 **10 Claims**



A numerical control system for performing a thread cutting operation on a lathe and responding to programmed path and final position coordinates to immediately execute a rapid tool retraction whenever one of the two controlled axes is in the final coordinate position.

3,676,652

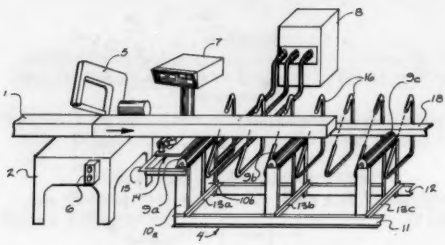
ELECTRONIC LINEAR MEASURING DEVICE

Hugh L. Millis, Jr., Anaheim, and Eugene A. Hoskinson, Tustin, both of Calif., assignors to Intertek Controls, Inc.

Filed Feb. 18, 1970, Ser. No. 12,256
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.32 **11 Claims**

The present invention relates to an electronic digital measuring system for measuring and displaying the length a member extends beyond a measuring point, and, more particularly, to an electronic digital measuring system which

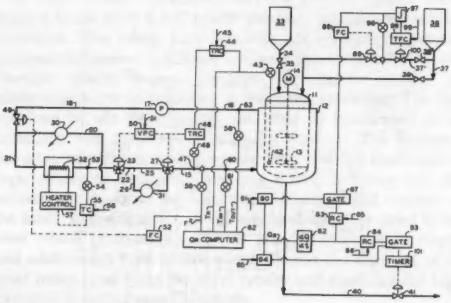
makes coarse and fine measurements by a pair of independent measuring units of the distance a member being measuring extends beyond a measurement point and additionally combines and displays the combined measurements.



3,676,653
MEASUREMENT OF HEAT GENERATED IN EXOTHERMIC REACTION

James L. Arens, and Hi W. Staten, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Aug. 28, 1970, Ser. No. 67,942
Int. Cl. G06g 7/58
U.S. Cl. 235—151.3 **10 Claims**



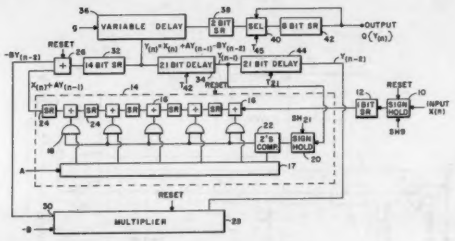
A batch reactor is controlled by measuring heat transfer from the reactor and integrating the measured signal. The computation is based on the flow of coolant and measured temperatures. When the integrated signal reaches a preselected value, the reaction is terminated. The integrated signal can also be used to control introduction of a reactant.

3,676,654
DIGITALIZED FILTER

William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed May 21, 1970, Ser. No. 39,190
Int. Cl. G06f 15/34, 7/39
U.S. Cl. 235—152 **13 Claims**

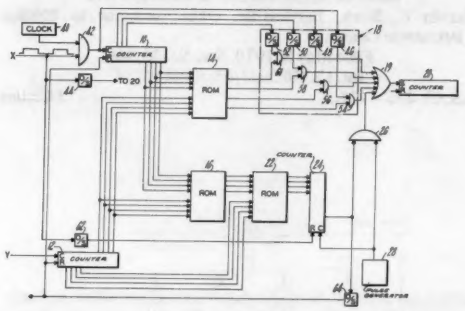
A digital filter constructed to digitally filter signals primarily of the sampled data format which filter will not oscillate due to overloading and which can be easily connected to a string of similar filters for performing complex filter operations due to internal word size and the manner of truncation of the output signal. Some embodiments of the filter may be constructed according to a general digital filter algorithm.



3,676,655
DIGITAL FUNCTION GENERATOR FOR TWO INDEPENDENT VARIABLES WITH INTERPOLATION

Anthony Ancona, Hartford, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed July 31, 1970, Ser. No. 60,001
Int. Cl. G06f 15/34
U.S. Cl. 235—152 **12 Claims**



A digital logic circuit for providing an output signal which is a function of a pair of independent variables is disclosed. The disclosed embodiment includes a two-dimensional function generator which operates as a pulse packet analyzer; the two-dimensional function generator providing a binary output signal which is an arbitrary function of a third variable with respect to the actual value of a first variable and a known value of a second variable. The disclosed embodiment also includes circuitry for interpolating the regions between curves as represented by the output of the two-dimensional function generator, as a function of the difference between the actual and known values of the second independent variable, in order to provide a binary signal which may be added to the two-dimensional function generator output to produce the desired output signal.

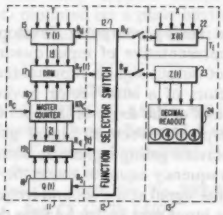
3,676,656
ELECTRONIC DIGITAL SLIDE RULE

Herman Schmidt, Binghamton, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 30, 1969, Ser. No. 837,787
Int. Cl. G06f 7/385, 7/39, 15/34
U.S. Cl. 235—156 **18 Claims**

An electronic digital slide rule in the form of a small hand-carried, battery powered digital electronic calculator capable of performing substantially all of the mathematical operations

performed by the conventional mechanical slide rule. The electronic digital slide rule utilizes a computing technique based on integrating for a period of time proportional to one input variable x, a fixed or variable pulse rate signal, the magnitude of which may be proportional to another input variable y, to a constant, or to some other known function. The computing technique is implemented by a pulse rate generator producing a pulsetrain representative of one factor of a function whose solution is desired. First factor input means are provided for supplying the one factor to the input of the pulse rate generation means whose output is supplied to an output integrator and timing circuit. A second factor input means is coupled to and controls at least in part operation of the output integrator and timing circuit means. The electronic digital slide rule is completed by a function selector switching means that interconnects the pulse rate generation means to the second factor input means and to the output integrator and timing circuit means in a manner to perform a selected one of a plurality of different logical operations on the first and second input factors to thereby derive a desired output solution. In preferred embodiments of the slide rule, an output indicating means is coupled to the output from the output integrator and timing circuit means for displaying the solution in



legible form. The plurality of different logical operations capable of being performed by the electronic digital slide rule include the arithmetic operations of addition, subtraction, multiplication, division, squaring and square rooting, and exponential, logarithmic and trigonometric operations. In constructing the electronic digital slide rule, the first and second factor input means may comprise mechanical switches having a plurality of discrete contact positions which also serve as in input memory for retaining the value of the input first and/or second factors. It is also preferred that the electronic digital slide rule operate from a battery operated power supply means for supplying energizing power to the slide rule through a start-stop switch which energizes the slide rule only during periods of use and conserves the battery power supply during periods of non-use. It is also anticipated that the electronic digital slide rule would be fabricated from micro-miniaturized integrated circuit structures mounted on a single supporting circuit board and housed in the form of a pocket size container for easy transport and use. A preferred embodiment of the electronic digital slide rule also includes a decimal point placement indicating means for visibly indicating to the user of the device the position of the decimal point in an output solution displayed by the output indicating means.

3,676,657
TWO REGISTER PARALLEL BINARY ADDER/SUBTRACTOR

Eeltje De Boer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

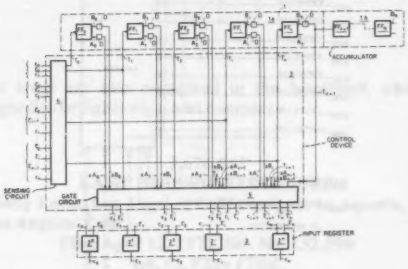
Filed June 4, 1970, Ser. No. 43,518

Claims priority, application Netherlands, June 7, 1969, 6908710

Int. Cl. G06f 7/50

U.S. Cl. 235—175 **7 Claims**

Binary arithmetic member for adding and subtracting binary numbers, in which the input register and the accumulator have connected between them a control-device comprising a sensing circuit for sensing the least significant bit place, where the binary number to be added or subtracted has a bit value "1," whose outputs corresponding to the respective bit places of the binary number are connected to the corresponding inputs of the accumulator so that under the control of a starting pulse that bistable flip-flop of the accumulator changes its state which ordinally corresponds to said least significant bit



place where the binary number to be added or subtracted has a bit value "1," said control-device comprising furthermore a gate circuit which, together with the sensing circuit, satisfies a given logical equation, so that a simple arithmetic member is obtained. A special device is provided for adding to or subtracting from the result in the accumulator an additional binary number 1 when the accumulator passes the zero position (FIGS. 2, 2*a*, 2*b*, 2*c*, 2*d*).

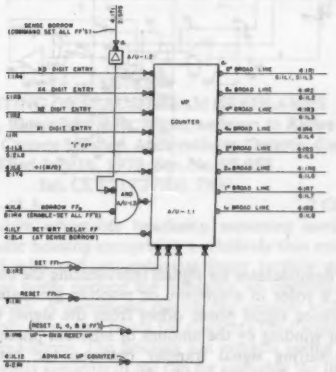
3,676,658
SERIAL ADDER/SUBSTRACTER UTILIZING COUNTERS

Robert A. Ragen, Hayward, Calif., assignor to The Singer Company

Division of Ser. No. 398,902, Sept. 24, 1964, Pat. No. 3,523,282, which is a division of Ser. No. 319,273, Oct. 28, 1963, abandoned. This application Dec. 12, 1969, Ser. No. 889,802

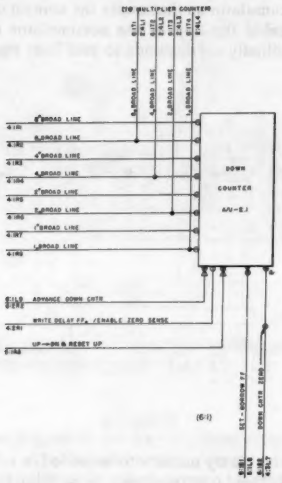
Int. Cl. G06f 7/50

U.S. Cl. 235—176 **8 Claims**



The disclosure relates to an electronic desk type calculator wherein a pair of four element counters acting together in

conjunction with timing and other circuitry are capable of performing the functions of shifting, addition, subtraction, multiplication and division.

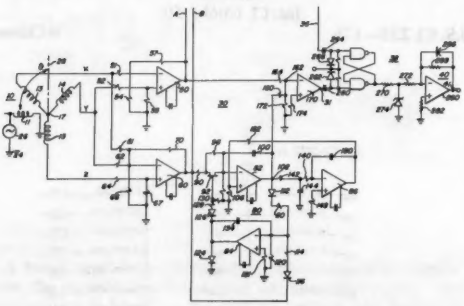


3,676,659

DEMODULATOR FOR ANGULARLY RELATED SIGNALS

Daniel R. Asmussen, Kirkland, Wash., assignor to United Control Corporation

Filed Oct. 19, 1970, Ser. No. 81,899
Int. Cl. C06g 7/22
U.S. Cl. 235—186 12 Claims



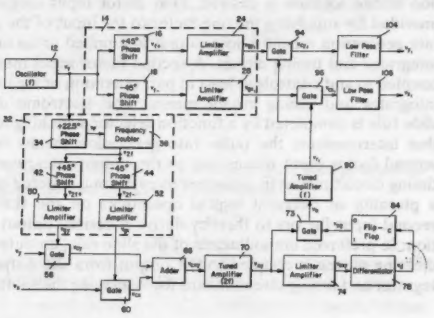
A demodulator for signals representing the angular position θ of a rotor in a synchro or resolver generates a corrected reference signal phase offset from the signal energizing the rotor winding by the amount of inherent phase shift ϕ occurring during signal transfer between the rotor and stator windings. The corrected reference signal is compared with a stator derived signal, produced by subtracting, adding, and 90° phase shifting signals from the stator windings, to produce a rectangular wave which is integrated to produce a DC voltage representing the true rotor angle θ. The 90° phase shift is accomplished by an operational amplifier integrator which includes an AGC amplifier and a drift stabilizing amplifier.

3,676,660

VECTOR HALF-ANGLE COMPUTER

Larry R. Miller, Berkeley, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 23, 1971, Ser. No. 155,926
Int. Cl. G06g 7/22
U.S. Cl. 235—186 8 Claims



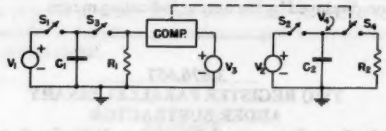
The disclosed analog computer develops from a pair of input signals representative of input quadrature component vectors, a pair of output signals representative of quadrature component vectors of a sum vector having the same magnitude but one-half of the angle of the sum vector of the input quadrature component vectors. Signal generating circuitry generates quadrature gating signals at both a first frequency and a second frequency equal to twice the first frequency. A first informational signal at the second frequency with a phase indicative of the input sum vector angle is developed from the combined output signals from circuits which gate the respective input signals with the second frequency quadrature gating signals. The first informational signal is gated with a phase coherent signal at the first frequency to produce a second informational signal at the first frequency with a phase indicative of one-half of the input sum vector angle. Computer output signals are obtained by gating the second informational signal with the first frequency quadrature gating signals and filtering the resultant gate output signals.

3,676,661

VOLTAGE-TIME-VOLTAGE COMPUTATION CIRCUIT USING R-C EXPONENTIAL DECAY CIRCUITS TO PERFORM MULTIPLICATION, DIVISION, ROOT-FINDING AND LOGARITHMIC CONVERSION

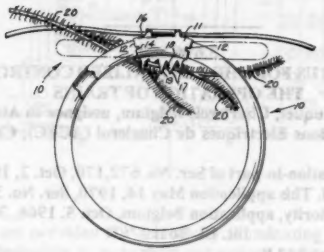
James A. Sprowl, 141 Greenbay Road, Wilmette, Ill.

Filed May 5, 1970, Ser. No. 34,772
Int. Cl. G06g 7/16, 7/24
U.S. Cl. 235—193 8 Claims



A new class of linear circuits can multiply and divide, find powers and roots, and perform both logarithmic and antilogarithmic conversions. The circuits convert incoming voltages into logarithmically related time intervals and simultaneously convert the time intervals back into antilogarithmically related voltages. Resistor-capacitor exponential decay circuits perform the voltage-time and time-voltage conversions under the control of comparators and switches.

3,676,662
CHRISTMAS TREE LIGHTS
James Vin Dick, W156 N8027 Pilgrim Road, Menomonee Falls, Wis.
Continuation of Ser. No. 759,083, Sept. 11, 1968, abandoned. This application May 18, 1970, Ser. No. 38,583
Int. Cl. A47g *33/16*; F21p *1/02*
U.S. Cl. 240—10 T 3 Claims



A supporting socket for displaying a fluorescent lamp on a Christmas tree. This lamp support comprises a pair of fluorescent sockets mounted on a plate having a plurality of prongs for grasping the branches of the Christmas tree.

3,676,663
INDICATING FLASHLAMP
Gene K. Beare, Darien, Conn.; Bernard Kopelman, Salem, Mass., and Donald E. Seeger, Succasunna, N.J., assignors to Sylvania Electric Products Inc.
Filed Jan. 21, 1969, Ser. No. 792,314
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 6 Claims

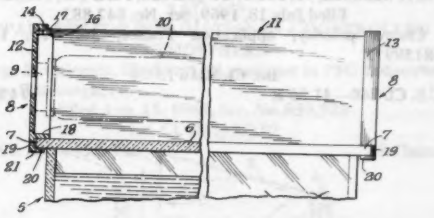
A flashlamp in an enclosing envelope, such as a flashcube having a plastic cover, with a substance which will product a protuberance on said envelope as a result of the flash. In this way, a used flashlamp can be detected by the feel of the protuberance, without the operator's having to look at the lamp or cube itself. The substance can be a material which generates heat or explodes on being subjected to other heat or radiation. A mixture of potassium chlorate with lactose, or with sulfer can be used, or thermit or other suitable materials. An ignitor and an exothermic material, or a sugar with an oxidant can be used.

3,676,664
WORK AND SAFETY LAMP
Patrick T. Corvetti, 69 Glen St., Brooklyn, N.Y.
Filed Aug. 11, 1970, Ser. No. 62,966
Int. Cl. F21v *21/14*; G08b *5/00*; F21l *15/14*
U.S. Cl. 240—6.4 W 2 Claims

A work and safety lamp to be worn on the head of the user consisting of an adjustable perforated headband which is suitable for mounting on the head of the user and including a forward projecting lamp mounted on the front portion of the headband and a flashing dome lamp extending above the headband. The batteries which power the dome lamp and the

head lamp are also contained in the headband, which is designed to be lightweight and compact.

3,676,665
LAMP HOUSING STRUCTURE
Anthony Louis, Los Angeles, Calif., assignor to Aquaria, Inc., Los Angeles, Calif.
Filed April 12, 1971, Ser. No. 132,990
Int. Cl. F21v *17/00*
U.S. Cl. 240—41.5 4 Claims

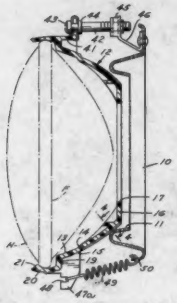


A lamp housing structure based upon a transparent cover of a household aquarium or like housing and comprising similar end caps of plastic material formed at their lower ends with grooves into which the opposite ends of said cover are frictionally fitted to, thereby, support and retain said caps in fixed relative position, and a sheet metal housing of inverted U-section having its ends telescopically and frictionally fitted into inwardly facing grooves in said caps, one or both said caps being provided with a fitting for a lamp that is enclosed by the housing and provides illumination for the interior of the aquarium.

3,676,666
MOUNTING OF SEALED BEAM HEADLAMPS
Jay E. White, Bloomfield Hills, Mich., assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada
Filed July 16, 1970, Ser. No. 55,450
Int. Cl. F21v *17/00*, *7/00*
U.S. Cl. 240—41.5 7 Claims

An automobile adjustable headlamp mounting having a one-piece plastic housing comprising a relatively thin annular spherical wall with a frusto-spherical inner surface and a frusto-spherical outer surface for engaging an opening in a mounting bracket. A peripheral rim on the annular wall has radially inwardly extending beads for engaging the flange of a sealed beam headlamp. The housing has integral spring tabs on the wall radially inwardly of the rim for engaging the flange of the headlamp to hold the latter in the housing between the bead and the spring tabs. Circumferentially positioned integral mounting brackets are located on the the annular wall. A novel spring metal clip is provided along the peripheral rim and cooperates with the beads on the flange of the housing to removably hold the headlamp in position. In addition,

brackets on the housing are utilized to mount the housing on a mounting bracket. One of the mounting walls has a screw associated therewith which is held in position by a novel spring clip.



3,676,667

OPTICAL PROJECTOR DEVICE

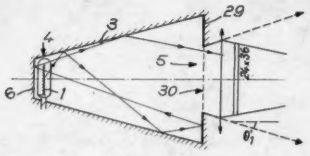
Pierre Malifaud, 95, boulevard Jourdan, Paris 14e, France

Filed July 18, 1969, Ser. No. 842,883

Claims priority, application France, July 19, 1968, 68159972

Int. Cl. F21u *13/04*

U.S. Cl. 240—41.35 R 9 Claims



An optical projector device in which light is collected from substantially 4π steradians by means of two reflector systems. One system comprises a tapering reflector, and the other system can include planar tapered, spherical, ellipsoidal, or cylindrical reflector elements which reflect light from the remaining solid angle towards the entrance window of the first system. The tapering reflector may have the general shape of a truncated cone, prism, or pyramid.

3,676,668

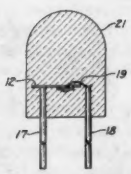
SOLID STATE LAMP ASSEMBLY

Neil E. Collins, Richmond Heights; Elwyn W. Kerber, and Raymond R. Neville, both of Mayfield Heights, all of Ohio, assignors to General Electric Company

Filed Dec. 29, 1969, Ser. No. 888,485

Int. Cl. B60q *3/04;* F21v *7/14;* H05b *33/12*

U.S. Cl. 240—103 R 8 Claims



A light-emitting diode element is mounted on a supporting tab, in a depression thereof having polished tapered sides. A dimple is provided in the depression, at the underside of the diode, so that only a small area of the bottom surface of the diode is in contact with the tab, thereby maximizing internal light reflection at the bottom surface and thus increasing the amount of light usefully emitted through the top and sides of the diode. The polished tapered sides of the depression in the tab reflect upwardly the light emitted through the sides of the diode, so as to be useful along with light emitted through the top of the diode. The assembly is encapsulated in glass or plastic.

3,676,669

APPARATUS FOR THE CENTRALIZED CONTROL OF THE OPERATION OF TRAINS

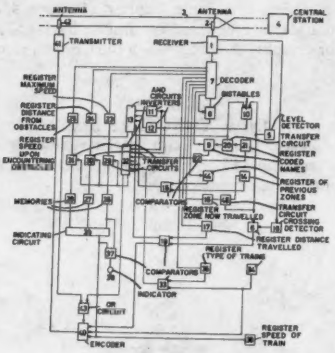
Christian Jauquet, Charleroi, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC), Charleroi, Belgium

Continuation-in-part of Ser. No. 672,170, Oct. 2, 1967, abandoned. This application May 14, 1970, Ser. No. 37,103

Claims priority, application Belgium, Oct. 5, 1966, 34179

Int. Cl. B61l *27/04*

U.S. Cl. 246—182 R 3 Claims



An apparatus for the centralized control of the operation of trains travelling in a network divided into zones, each zone being controlled by a central station that transmits coded messages to a bilateral communication system. A coded name is given by the central station to each train entering a zone. The train retains its coded name while in the zone and considers only messages intended to it. The train transmits to the central station data relating to its speed, its zone of origin and the distance it has travelled in the zone as well as other characteristics. Such data is stored in a memory portion of the central station and serves to send the coded messages to the train based on that data, on the obstacles lying ahead of the train and on the true distance travelled by the train at the time of sending the codes messages. The central station calculates at all times such true distance by means of the distance stored in the above-mentioned memory portion of the central station, of the speed of the train and of the time interval elapsed between the storing of the above-mentioned distance and the transmission of the coded messages.

3,676,670

ELECTRON GUN BIASING SYSTEM

James Dao, Alameda, and Nelson C. Yew, Los Altos, both of Calif., assignors to ETEC Corporation, Mountain View, Calif.

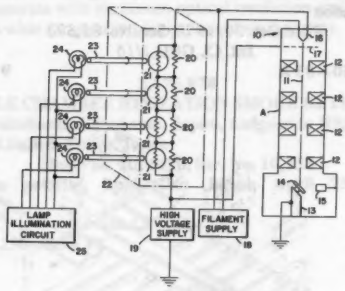
Filed Oct. 9, 1970, Ser. No. 79,419

Int. Cl. H01j *37/26;* G01n *23/00*

U.S. Cl. 250—49.5 A 16 Claims

An electron gun biasing system, particularly adapted for use in an electron microscope, in which a plurality of resistors are

provided in series with the cathode of the electron gun. In parallel with each of the resistors is a photoconductor, and



means are provided for selectively illuminating the various photoconductors so as to short out various resistors, and thus vary the bias. Typically, the resistors and photoconductors may be located inside a shielded box, and a plurality of light pipes may be directed through openings in the shielded box, so that the ends of the light pipes will be adjacent the photoconductors. A plurality of lamps may then be disposed at the ends of the light pipes outside the box, the lamps being selectively illuminated by a simple lamp illumination circuit.

3,676,671

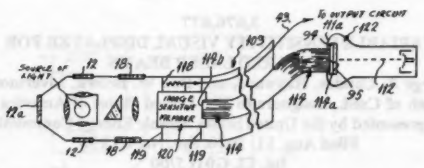
DEVICES OF FIBEROPTIC AND VACUUM TUBE CONSTRUCTION

Edward Emanuel Sheldon, 30 East 40th Street, New York, N.Y.

Division of Ser. No. 498,959, Oct. 20, 1965, Pat. No. 3,423,620, which is a division of Ser. No. 158,638, Dec. 4, 1961, Pat. No. 3,279,460, which is a continuation-in-part of Ser. No. 624,829, Nov. 28, 1956, Pat. No. 3,021,834. This application Oct. 1, 1968, Ser. No. 764,175. The portion of the term of this patent subsequent to Oct. 3, 1984, has been disclaimed.

Int. Cl. H01j *1/54*

U.S. Cl. 250—71 R **19 Claims**



This invention relates to novel fluorescent and photoelectric screens which comprise supporting means constructed by a plurality of light conducting novel guides operating by internal reflection of light and mounted in a two-dimensional array. The invention is also directed to the use of such means in photoelectric inspection devices.

3,676,672

LARGE DIAMETER ION BEAM APPARATUS WITH AN APERTURED PLATE ELECTRODE TO MAINTAIN UNIFORM FLUX DENSITY ACROSS THE BEAM

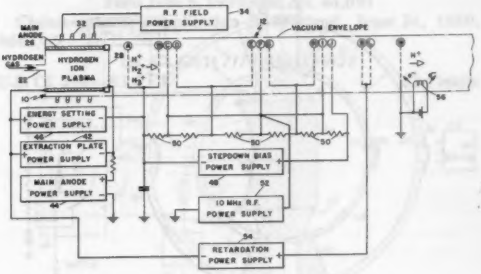
Benjamin B. Meckel, 10191 Grandview Drive, and Robert L. Lebduska, 4367 Vista Way, both of La Mesa, Calif.

Filed Feb. 3, 1969, Ser. No. 795,862

Int. Cl. H01j *37/08, 39/34*

U.S. Cl. 250—41.9 SE **4 Claims**

The apparatus generates a high energy beam of large size, on the order of 12 centimeters or more in diameter, the beam being passed through a mass separator which extracts unwanted charged particles, leaving a pure single specie beam. The resultant beam is space charge neutralized to prevent coulombic spreading and maintains a substantially constant



flux density over the full beam cross section. Using appropriate gaseous material for ionization, the apparatus provides a particularly effective simulation of solar plasma wind, as one example of its utility.

3,676,673

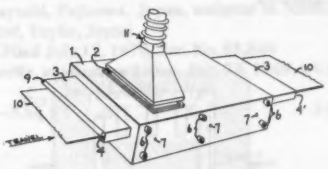
APPARATUS FOR IRRADIATION IN A CONTROLLED ATMOSPHERE

George E. Coleman, Elmhurst, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 18, 1969, Ser. No. 850,926

Int. Cl. H01j *37/30*

U.S. Cl. 250—49.5 TE **15 Claims**



Apparatus which permits treatment of products with ionizing radiation in a controlled atmosphere comprises an inner chamber positioned within an outer chamber, the workpiece to be treated passing through the inner chamber. The outer chamber has a radiation-permeable window in one surface and the second chamber has means for the passage of radiation in juxtaposition with the window in the outer chamber. The apparatus may also contain means for carrying the product to be treated, as well as cooling means at the end of the radiation path.

3,676,674

APPARATUS FOR IONIZATION ANALYSIS

Vladimir T. Zaviantseff, San Francisco, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

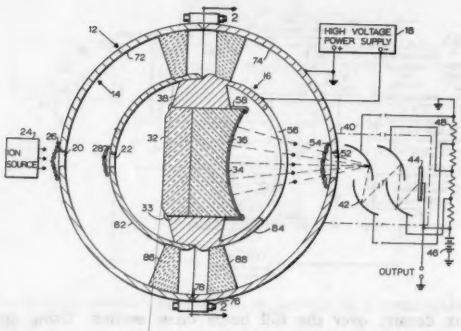
Filed July 16, 1970, Ser. No. 55,536

Int. Cl. G01t *1/20*

U.S. Cl. 250—71.5 R **6 Claims**

Apparatus for ionization analysis comprising generally concentric outer and inner tubular shaped electrodes between which a d-c potential is applied so as to produce an electric field therebetween. Adjacent scintillating and photoemissive members are mounted inside the inner electrode, and generally aligned front and rear apertures are formed in the electrodes. Positive ions from a source of ions are directed through the front apertures and onto the scintillating member

for the production of light pulses therein. Light from the light pulses striking the photoemissive member produces photoelectrons which are directed outwardly from the electrodes through the rear apertures therein. Electron multiplying means may be positioned to receive the photoelectrons for amplifying the same. With this arrangement the d-c potential which produces the electric field functions to accelerate both the incident positive ion beam and the photoelectrons produced by the photoemissive member.

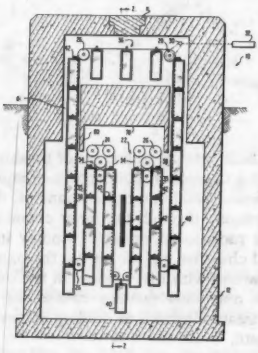


3,676,675

PRODUCTION IRRADIATOR

Jackson A. Ransohoff, Bethesda, and Lewis P. Sarkozi, Adamstown, both of Md., assignors to Neutron Products, Inc., Dickerson, Md.

Filed May 29, 1969, Ser. No. 829,080
Int. Cl. G21h *5/00*
U.S. Cl. 250—52 **7 Claims**



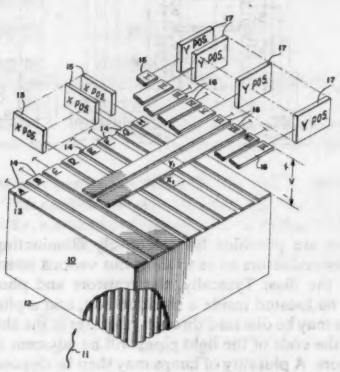
Irradiation of material in packages is carried out continuously by a unique conveyor arrangement which transports closely spaced carriers containing the packages in vertical runs past a radiation source. The radiation conveyor utilizes extension arms to increase the radius of outside turns and allow the carriers to be spaced closer to the source and to each other. A transfer conveyor is provided to obviate the need for inside turns so that individual carriers and adjacent vertical runs may be closely spaced in the radiation zone. A loading station provides means for the horizontal loading and unloading of the packages in increments to provide for the integration of the radiation dose horizontally across the carrier length. An effective labyrinth radiation shield above the source shields the loading station. The radiation dosage per pass through the system may be varied by varying the speed of the conveyor or the strength of the radiation source plaque.

3,676,676

LOW ENERGY PARTICLE COUNTER WITH TWO-DIMENSIONAL POSITION SENSING

Toivo A. Somer, Lake Orion, Mich., assignor to The Bendix Corporation

Filed Oct. 30, 1970, Ser. No. 85,593
Int. Cl. G01t *1/16*
U.S. Cl. 250—83 R **9 Claims**



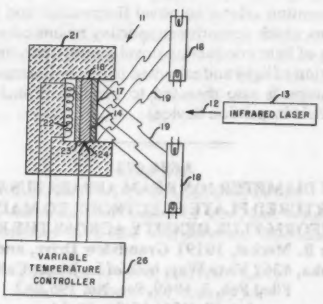
A system for detecting radiant energy, such as photons or charged particles, and yielding an output which is indicative of the position in the x, y plane of the input surface of the detection element at which the energy impacts the detection element. The system includes a radiation detector which is subjected to the radiant energy and which yields an output charge in response thereto. The output charge energizes a plurality of charge sensitive elements which give an indication of the position at which the radiant energy impacts the detection element in one direction. A second plurality of charge sensing elements is also energized by the output charge to yield a position indication in the other direction. The individual outputs from the two pluralities of charge sensitive elements can, therefore, be combined to indicate the position along two orthogonal axes at which the detected radiant energy impacted the radiation sensitive element.

3,676,677

VARIABLE SENSITIVITY VISUAL DISPLAYER FOR INFRARED LASER BEAMS

George A. Condas, Hayward, and Don W. Brown, Livermore, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 11, 1970, Ser. No. 63,198
Int. Cl. G01t *5/00*
U.S. Cl. 250—83.3 H **9 Claims**



A thermographic phosphor screen caused to fluoresce by continuous ultraviolet excitation is impinged by an infrared

laser beam which locally heats the phosphor to quench its fluroescence and thereby form an image of the beam as a dark pattern on the screen. Provision is made to vary the thermal bias on the screen over a range of phosphor temperatures commensurate with maximum optical resolution and sensitivity thru a wide range of impinging laser beam powers.

3,676,678

SINGLE CHAMBER IONIZATION SMOKE DETECTOR

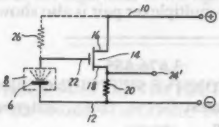
Naoki Takahashi, Yokohama, Japan, assignor to Nittan Company Limited, Tokyo, Japan

Filed Feb. 10, 1970, Ser. No. 10,158

Claims priority, application Japan, April 25, 1969, 44/31475

Int. Cl. G01n *21/26*

U.S. Cl. 250—83.6 FT 3 Claims



An ionization smoke detecotor having a single open ionization chamber which is connected with a field effect transistor and wherein the leakage impedance between the gate and drain of the transistor serves as a high impedance path. detector

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3,676,679

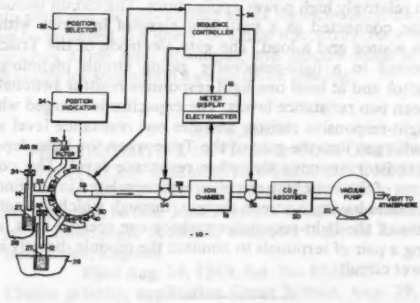
APPARATUS FOR DETECTING BIOLOGICAL ACTIVITY

John R. Waters, Towson, Md., assignor to Johnston Laboratories, Inc., Cockeysville, Md.

Continuation-in-part of Ser. No. 770,484, Oct. 25, 1968. This application April 22, 1970, Ser. No. 30,675

Int. Cl. G01t *1/18*

U.S. Cl. 250—83.6 FT 12 Claims



A sample of material such as blood, urine, spinal fluid, or the like to be tested for the presence of biological activity is placed into a sterile container together with a suitable growth medium which includes a C^{14} carbon containing carbon source (such as C^{14} substituted glucose) which is fermentable to produce gaseous $C^{14}O_2$. An incubator is provided for exposing the container and its contents to conditions conducive to growth. After a suitable incubation period, a portion of the gaseous atmosphere in the container is withdrawn and analyzed in gaseous form in an ionization chamber for the presence of radioactivity. Valve and conduit means are provided for analyzing a number of samples sequentially.

3,676,680

IONIZATION FIRE ALARM WITH INSULATION MONITORING SYSTEM

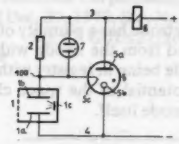
Andreas Scheidweiler, Stafa, and Otto Meier, Herrliberg, both of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Filed June 8, 1970, Ser. No. 44,091

Claims priority, application Switzerland, June 24, 1969, 9662/69

Int. Cl. G01t *1/18;* H01j *39/28*

U.S. Cl. 250—83.6 FT 23 Claims



An ionization fire alarm comprising a measuring ionization chamber which is connected in series with at least one resistance element, preferably constructed as a reference ionization chamber, at a voltage source. An electrical amplifier and/or threshold value detector circuit is also provided, the input of which is electrically coupled with the junction point of the measuring ionization chamber and the resistance element. According to an important aspect of the invention the electric circuit of the ionization fire alarm system is constructed such that a signal is released when the input potential exceeds an upper threshold value or drops below a lower threshold value.

3,676,681

IONIZATION SMOKE DETECTOR

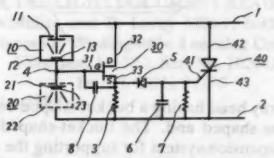
Akihiro Kobayashi, Fujisawa, Japan, assignor to Nittan Company Limited, Toyko, Japan

Filed July 17, 1970, Ser. No. 55,844

Claims priority, application Japan, July 22, 1969, 44/57367

Int. Cl. G08b *17/10*

U.S. Cl. 250—83.6 FT 3 Claims



An ionization smoke detector having an open and a closed chamber, each including a pair of electrodes, the electrodes in the chambers being connected in series across a voltage supply. A field effect transistor interconnected with the chambers and the voltage supply to sense a change in impedance in the open chamber upon the admission of smoke and sensitivity controlling means interconnected with the field effect transistor to prevent the production of an erroneous signal from the transistor as a result of momentary increases of smoke concentrations in the ambient air.

3,676,682

ABSORBED IONIZING RADIATION MEASURING DEVICE

Fred W. Falk, 36 Philipp Schmitt Str., Sandhausen, Germany

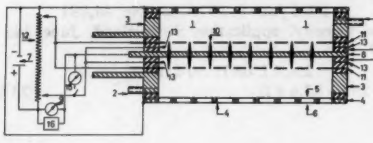
Filed Oct. 30, 1968, Ser. No. 774,569

Int. Cl. G01t *1/18;* H01j *39/26*

U.S. Cl. 250—83.6 4 Claims

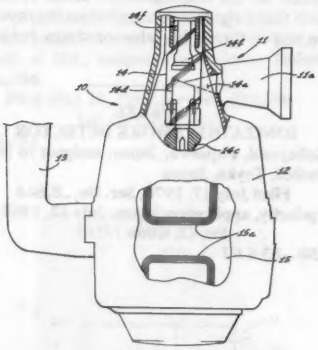
An ionization chamber for measuring absorbed radiation is disclosed, the chamber including a housing which incor-

porates an anode, a cathode, and a space charge electrode. The anode comprises a conducting plate which has a plurality of protruding needle points with each of the needle points and the conducting plate being at the same electrical potential.



The space charge electrode has a plurality of holes therein and is physically displaced from the anode with the holes of the space charge electrode being in registry with the needle points of the anode. The potential of the space charge electrode is less than that of the anode itself.

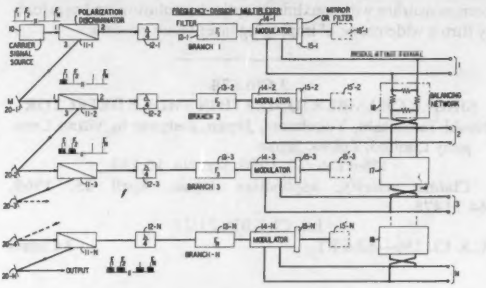
3,676,683
DENTAL X-RAY HEAD
Cornelius Keith Vandervelden, Kansas City, Mo., assignor to Litton Medical Products, Inc., Des Plaines, Ill.
Filed Dec. 31, 1969, Ser. No. 889,503
Int. Cl. H01j *35/00*
U.S. Cl. 250—90 **9 Claims**



A dental X-ray head having a bucket-shaped end and an exaggerated cone-shaped end. The bucket-shaped end is connected to a suspension system for supporting the dental X-ray head and contains a high voltage transformer and various connections thereto, while the relatively smaller exaggerated cone-shaped end houses an X-ray tube and the contour of the exaggerated cone-shaped end follows the slope of the electrical potential established across the X-ray tube.

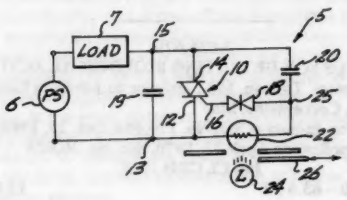
3,676,684
FREQUENCY-DIVISION MULTIPLEX COMMUNICATION SYSTEM
Owen Edward De Lange, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 23, 1970, Ser. No. 74,768
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **15 Claims**

A frequency-division multiplex communication system is described wherein the multiplexer comprises a plurality of branches, each one of which selectively isolates and modulates one of a plurality of input carrier signals. The modulated signals are either reflected to rejoin the unmodulated carriers or they are separated and combined in a separate output circuit. At the receiver a demultiplexer selectively isolates the several modulated carriers by means of a network similar to



the multiplexer, and demodulates them in turn. A repeater, using a demultiplexer-multiplexer pair is also shown.

3,676,685
LIGHT-RESPONSIVE SWITCHING CIRCUIT
Clifford E. Myer, Forest Grove, Oreg., assignor to Xercon, Inc., Portland, Oreg.
Continuation-in-part of Ser. No. 6,055, Jan. 27, 1970, abandoned. This application May 4, 1970, Ser. No. 34,430
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **7 Claims**

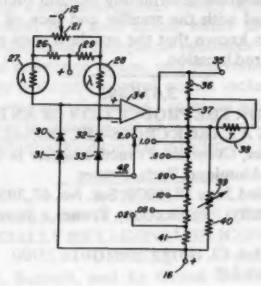


A modularized light-responsive switching circuit capable of use in relatively high power applications. The circuit includes a Triac connected as a switching element in series with a power source and a load. The gate electrode of the Triac is connected to a light-responsive gating circuit including a capacitor and at least one light-responsive resistor switchable between two resistance levels. The capacitor is charged when the light-responsive resistor assumes one resistance level and is discharged into the gate of the Triac when the light-dependent resistor assumes the other resistance level. The components of the switching circuit are encapsulated in a cylindrical module having a screen therein, through which the active surface of the light-responsive resistor can receive light, and having a pair of terminals to connect the module directly into a power circuit.

3,676,686
HIGH SENSITIVITY LIGHT ABSORBANCE APPARATUS
Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties, Inc., Lincoln, Nebr.
Filed July 24, 1970, Ser. No. 58,020
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **11 Claims**

An arrangement for measuring very small changes in the absorbance of light within an optical cell by means of a photoresistive photocell, the photocell being connected in a circuit wherein the electrical load impedance presented to the

photocell is very small compared to that of the photocell, and including circuitry so that the output voltage is very nearly



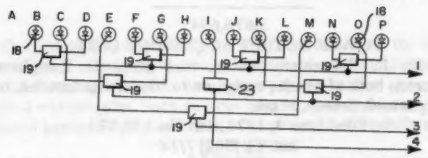
proportional to the logarithm of the light intensity striking the photocell.

3,676,687

SHADOW EDGE POSITION DETECTOR USING LINEAR ARRAY OF DIODES WITH LOGIC TO GENERATE GRAY CODE

Morris D. Freedman, Southfield, Mich., assignor to The Bendix Corporation

Filed Sept. 4, 1970, Ser. No. 69,755
Int. Cl. G01n *21/30;* **H03k** *3/42, 19/20*
U.S. Cl. 250—209 **10 Claims**



A system for detecting shadow edges by use of a linear array of photodiodes whose output is a Gray Type Code is described. Because of the unique connections of the diodes into pairs and the appropriate use of logic circuitry, the diodes can be arranged in a linear, or single line, array. As a result of the Gray Code type of output, the shadow edge is unambiguously located within a single diode spacing.

3,676,688

PHOTOSENSITIVE DEVICES INCORPORATING POLYMERIC ELEMENTS WHICH GIVE HIGH ABSOLUTE PHOTO-CURRENTS

Allan Sharples; Arthur John Rostron, and Graeme McGibbon, all of Edinburgh, Scotland, assignors to Ilford Limited, Ilford, Essex, England

Filed Aug. 26, 1969, Ser. No. 853,208
Claims priority, application Great Britain, Aug. 29, 1968, 41,380/68; Feb. 26, 1969, 10,226/69
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 R **6 Claims**

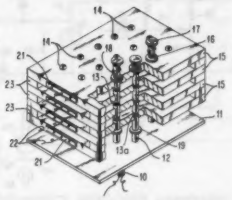
This application describes a photosensitive device which comprises a thin sheet of a polymeric compound having an electrode directly on each face, the relationship of the work functions of the polymer and of the material of at least one of the electrodes being such that there is charge transfer across the interface when the device is illuminated. The polymeric compound is one in which there is a high degree of electronic orbital overlap between hydrogen atoms in adjacent polymer chains, or is a polymeric vinyl compound which carries groups on carbon atoms of the polymer chain which have a high electronegativity. Typically useful polymers are polyvinyl fluoride, polyvinyl acetate, polyvinyl alcohol, nylons, polyurethanes and polyacrylamides and copolymers of vinylidene fluoride and hexafluoropropene. On application of 100 V between the electrodes in the dark and under conditions of illumination of 1000 lux, a difference in dark and photocurrents of at least a factor of 10 may be obtained.

3,676,689

OPTICAL CODE GENERATING APPARATUS

Delbert M. Knepper, Sr., Durham, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,727
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 **10 Claims**



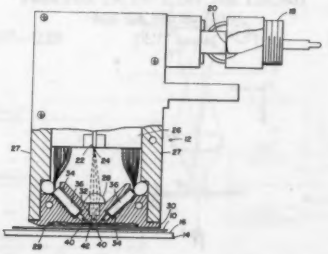
An optical encoding apparatus in which selected ones of a number of light conducting members are illuminated by a movable, independently selectable member, is disclosed. This movable member carries a coded array of illuminating areas. Photosensitive devices are associated with each of the light conductive members to indicate the illuminated condition of a given member, or array of members, in response to their being illuminated by the illuminating areas of the movable member. These photosensitive devices provide a coded output signal in the form of voltage or current information for use by other equipment which may utilize or be responsive to, or transmit the coded signals so produced.

3,676,690

REFLECTED LIGHT DOCUMENT READING HEAD

John V. McMillin, and D. Larry Miller, both of Iowa City, Iowa, assignors to Westinghouse Learning Corporation

Filed Jan. 4, 1971, Ser. No. 103,416
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 D **5 Claims**



A device for converting information in the form of marks or punched holes on documents into electronic signals which are translated into a form acceptable to a computer. The device, commonly called a reading head, senses the intensity of light reflected from the document being read, the light being directed upon the document from a controlled, remote light source. The light is focused onto the document surface from the remote source through a system of lenses and optical

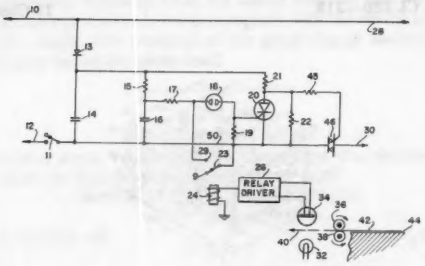
fibers. Phototransistors on each side of the focused light sense the intensity reflected from the document. By focusing the light and mounting the phototransistors at a proper angle close to the document surface, greatly improved accuracy and results are obtained.

3,676,691

AUTOMATIC SHUT-OFF CIRCUIT FOR COPYING MACHINE

Richard Nordine, Oakland Park, Fla., assignor to Copystatics Manufacturing Corporation, Miami Lakes, Fla.

Filed Oct. 5, 1970, Ser. No. 77,950
Int. Cl. G06m 7/00
U.S. Cl. 250—222 R **9 Claims**



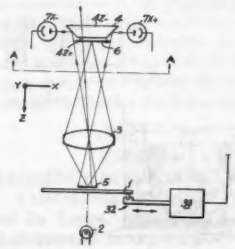
An automatic shut-off circuit for a copying machine. A Triac is included in one of the two power leads extended to the machine. A control circuit, connected across the power line, includes a 60-second timing circuit and an SCR. The SCR is triggered at the end of the 60-second timing period and causes the Triac to turn off, thus cutting off power to the machine. Whenever an original document inserted into the machine is detected, the timing circuit is reset. Only if no new document has been fed into the machine for a period of 60 seconds is the machine automatically shut off.

3,676,692

POSITIONING APPARATUS FOR ARTICLE WITH PORTION DETERMINING PORTION OF PREDETERMINED CONFIGURATION

Yukiyasu Nishikawa, Saitama-ken, and Tsuneo Hidaka, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 26, 1970, Ser. No. 50,069
Int. Cl. G01d 5/34
U.S. Cl. 250—231 R **9 Claims**



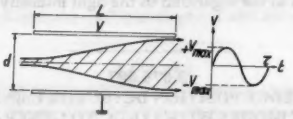
An article-positioning apparatus for precisely determining the location of an article either with respect to another article or with respect to a given reference. The article has a position-determining portion of a predetermined configuration. A prism which has the shape of a truncated pyramid is provided with opposed end faces one of which is smaller than the other with both of these end faces having the predetermined configuration of the position-determining portion of the article. An optical projector projects onto the smaller end face of the prism an image of the position-determining portion of the article, and the deviation of this image from a position of precise alignment with the smaller end face of the prism is determined so that the article can be positioned at a location where the image of the position-determining portion thereof is indeed precisely aligned with the smaller end face of the pyramid, whereupon it is known that the article is then precisely situated at the desired location.

3,676,693

METHOD FOR THE PRODUCTION OF AN ION BEAM HAVING A LARGE CROSS-SECTIONAL AREA

Georges Guernet, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed June 18, 1970, Ser. No. 47,389
Claims priority, application France, June 26, 1969, 6921490
Int. Cl. H01J 37/00; G01n 23/00
U.S. Cl. 250—49.5 C **3 Claims**



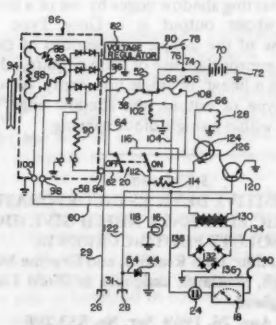
A method and a device for the production of a substantially parallel ion beam having a large cross-sectional area, wherein a first double deflection of a parallel incident-ion pencil is carried out in a same plane X and a second double deflection is carried out in a perpendicular plane Y by means of at least two alternating fields having different periods, said fields being parallel to said planes X and Y and perpendicular to the direction of the incident-ion beam.

3,676,694

POWER OUTPUT ACCESSORY UNIT

Franklin R. Schneider, Seattle, and Jerry D. Lanphear, Everett, both of Wash., assignors to Modern Industries, Incorporated, Seattle, Wash.

Filed June 4, 1971, Ser. No. 150,073
Int. Cl. H02j 7/14
U.S. Cl. 307—10 R **19 Claims**



An accessory unit for use with an engine powered vehicle having a conventional electrical system including a battery, voltage regulator and a dynamo of the alternator type having exposed AC and DC taps which in normal operation supplies DC power to the engine electrical system and, in some embodiments, to the electrical system of a host vehicle. A switch is provided to disconnect the dynamo from the engine electrical system. Also provided is a manually adjustable potentiometer through which the alternator output may be controlled. Circuit means feed the DC output of the dynamo to a welding terminal and the AC output of the dynamo to a step up transformer. A rectifying circuit rectifies the boosted AC

output of the transformer and an outlet receptacle permits delivery of a 110–120 volt DC power output to power tools and like loads.

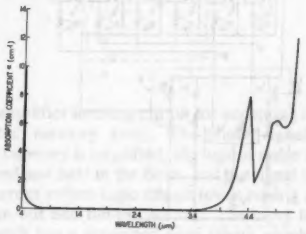
Both the DC welding output terminals and the DC outlet receptacle have a common ground return through resistance means. Placement of a load across either the welding terminals or the DC outlet receptacle produces a voltage drop across the said resistance means, and this voltage drop is utilized to actuate a throttle control circuit including a control transistor, a power transistor and a solenoid type throttle control, functioning to increase the speed of the host vehicle engine when substantial load current is called for at either power output.

3,676,695

NONLINEAR OPTICAL DEVICES UTILIZING SUBSTANTIALLY HEXAGONAL SILICON CARBIDE DEVICES

Shobha Singh, Summit, and Le Grand Gerard Van Uitert, Morris Twsp., Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 23, 1971, Ser. No. 165,075
Int. Cl. H03f 7/04
U.S. Cl. 307—88.3 **5 Claims**



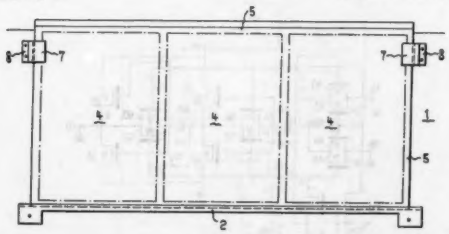
Optical devices depending for their function upon the incorporation of substantially hexagonal silicon carbide are useful for electromagnetic radiation frequency conversion at near infrared wavelengths. Such devices may be operated inter alia as second harmonic generators or as parametric downshifters.

3,676,696

TIME MEASURING SYSTEM FOR SWIMMING COMPETITIONS

Francois J. Leu, Evilard; Peter M. Tosin, Biel, and Ernst Werner, Safnern, all of Switzerland, assignors to Omega Louis Brandt & Frere S.A., Berne, Switzerland

Filed Dec. 15, 1970, Ser. No. 98,361
Claims priority, application Switzerland, Dec. 23, 1969, 11076/69
Int. Cl. H01h 35/00
U.S. Cl. 307—119 **9 Claims**



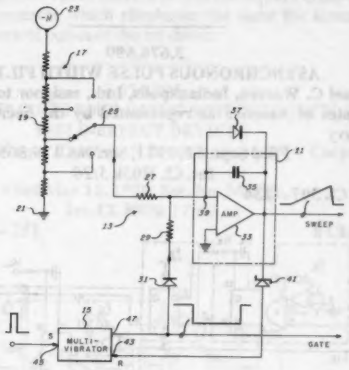
A time measuring system for swimming competitions, wherein a plate is attached to the wall of the swimming pool and electrical control signals for a time counter are produced when the plate is touched by a competitor. The control signals are produced by contact-free transducers such as piezo-electric, electromagnetic or electrodynamic transducers of high sensitivity and reliability.

3,676,697

SWEEP AND GATE GENERATOR

Arthur B. Davenport, Charlottesville, Va., assignor to Sperry Rand Corporation

Filed Oct. 23, 1970, Ser. No. 83,376
Int. Cl. H03k 4/08
U.S. Cl. 307—228 **1 Claim**



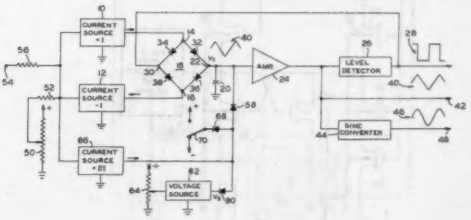
A variable frequency sawtooth generator contains a high input impedance integrating amplifier driven through a resistance network from a bistable multivibrator and an adjustable voltage divider energized from a steady DC source. The multivibrator is driven into a first stable state by an externally generated trigger pulse and into a second stable state when the output voltage from the amplifier exceeds a predetermined threshold value. In the latter state, the voltage from the multivibrator balances out the voltage from the DC source and a diode shunted around the amplifier clamps the amplifier input and output circuits together. When the multivibrator is subsequently driven into the first stable state, the voltage from the multivibrator is blocked by a series diode so that only the voltage derived from the DC source is applied to the amplifier. The diode shunted around the amplifier is back-biased under these conditions and a voltage appears at the output of the amplifier which increases at a steady rate determined by the selected magnitude of the adjustable voltage.

3,676,698

CONTROLLABLE WAVEFORM GENERATOR

Lloyd Wayne Hunter, Beaverton, Oreg., assignor to Exact Electronics, Inc., Hillsboro, Oreg.

Filed Feb. 19, 1971, Ser. No. 116,901
Int. Cl. H03k 4/08
U.S. Cl. 307—228 **12 Claims**



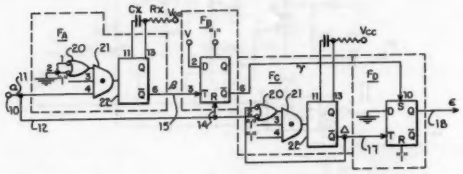
A waveform generator includes an integrating circuit alternately provided with oppositely directed, adjustable input currents, under the control of a level detector responsive to predetermined positive and negative extremes of the integrated output. Adjustment of input current is effective for

changing the frequency of operation. The triangular waveform produced may be terminated at a selectable level therealong through operation of a gating means which interrupts an aforementioned input current when the integration reaches a predetermined intermediate voltage level. Waveform generation is subsequently resumed at this same level. When interrupted, the input current returns to a current source providing a current adjustably proportioned relative to the input current.

3,676,699
ASYNCHRONOUS PULSE WIDTH FILTER

Samuel C. Warren, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 13, 1971, Ser. No. 179,865
Int. Cl. H03k *5/20*
U.S. Cl. 307—234 **4 Claims**

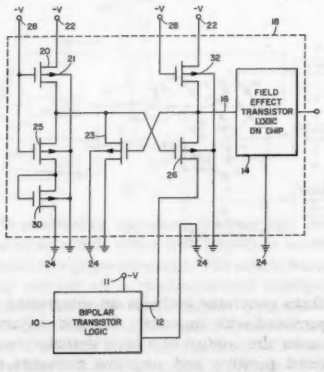


An asynchronous pulse width filter having four two-state logic circuits, the first having a retriggerable circuit capable of delaying the leading edge of an input pulse by a presettable time Δt, coupled to a second logic circuit capable of detecting the trailing edge of the input pulse after the delayed leading edge, coupled to a third logic circuit of non-retriggerable capabilities but capable of delaying the trailing edge from the prior logic circuit a fixed amount of time Δt and coupled to a fourth logic circuit capable of triggering a leading edge at the trailing edge of the output pulse of the second logic circuit and of triggering a trailing edge at the trailing edge of the delayed output Δt of the third logic circuit to provide discrimination of pulse width to reproduce valid pulses precisely in pulse width and in relative position.

3,676,700
INTERFACE CIRCUIT FOR COUPLING BIPOLAR TO FIELD EFFECT TRANSISTORS

John K. Buchanan, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 10, 1971, Ser. No. 114,223
Int. Cl. H03k *19/08, 17/60*
U.S. Cl. 307—205 **2 Claims**

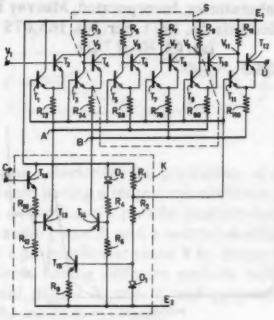


Bipolar and field effect transistors have different threshold voltage and different voltage swings during operation, and furthermore, the threshold voltage for a field effect transistor may be unpredictable when the field effect transistor is applied to a monolithic IC chip. A circuit is disclosed whereby the output of a bipolar transistor circuit such as a logic circuit may drive the input of a large scale integrated field effect transistor circuit, which may involve other logic circuits.

3,676,701
SHIFT REGISTER

Wolfdietrich Georg Kasperkovitz, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed April 1, 1971, Ser. No. 130,186
Claims priority, application Netherlands, April 3, 1970, 7004766
Int. Cl. G11c *19/00;* **H03k** *23/08*
U.S. Cl. 307—221 R **5 Claims**

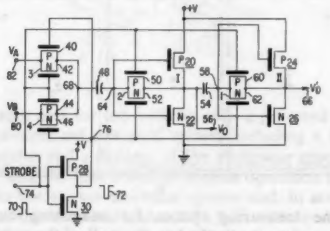


A shift register comprising a sequence of shift register elements which each include a first and a second transistor the emitters of which are interconnected and have clock pulse signals applied to them. The base of the second transistor and the collector of the first transistor of each of the shift register elements are interconnected. The base of the first transistors of all the shift register elements are connected to a point of reference potential, whilst the collector of second transistor of each of the shift register elements is connected to the collector of the first transistor of the succeeding shift register element.

3,676,702
COMPARATOR CIRCUIT

Ellwood Patrick McGrogan, Jr., Camden, N.J., assignor to RCA Corporation

Filed Jan. 4, 1971, Ser. No. 103,736
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **11 Claims**

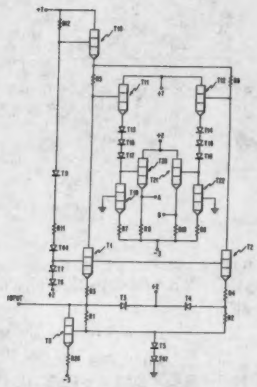


A voltage comparator utilizing complementary MOS techniques. The comparator circuit includes an inverter network and switching circuitry for selectively supplying reference or monitored signals to the inverter network. A signal representative of the relationship between the reference and monitored signals is produced by the inverter network.

3,676,703
SENSE AMPLIFIER LATCH FOR MONOLITHIC MEMORIES

John E. Gersbach, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,247
Int. Cl. H03k 5/20, 5/08
U.S. Cl. 307—235 7 Claims

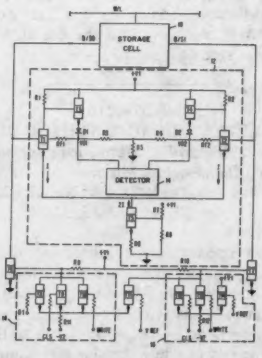


A sense amplifier latching circuit for accepting signals from a monolithic memory array. The input signal from the monolithic memory is amplified, the logical sense of the input is determined and held in the latch, and the signal is translated down to current switch logic circuit levels having a capability for large fan-out and fan-in (dot or). The input to the sense amplifier latch has a grounded base clamp providing a very low impedance input in the presence of bi-polar noise current. The sense amplifier latch circuit further includes threshold tracking, temperature compensating, and power supply compensating circuits. The entire circuit includes emitter follower and grounded base circuits providing a high band width resulting in fast rise-time and low propagation delay.

3,676,704
MONOLITHIC MEMORY SENSE AMPLIFIER/BIT DRIVER

Nicholas M. Donofrio, Wappingers Falls, and Jehoshua N. Pomeranz, Monsey, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,368
Int. Cl. H03k 5/20
U.S. Cl. 307—235 5 Claims

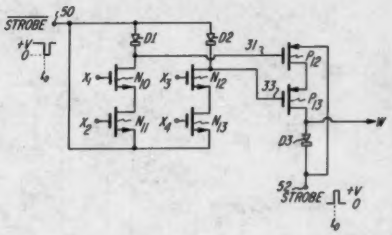


This specification describes a sense amplifier/bit driver circuit for a monolithic memory storage cell with a double ended output. The sense amplifier consists of two shunt feedback amplifiers connected differentially across the double ended output of the storage cell. There is a resistive connection between the outputs of the two shunt feedback amplifiers to make each input of the two shunt feedback amplifiers relatively insensitive to large changes at the other input. The bit driver for the circuit contains two current switch circuits for controlling the potential at each end of the double ended output of the storage cell. These current switch circuits are cross-coupled by a transistor which eliminates the need for inverting one of the control pulses to the bit driver.

3,676,705
LOGIC CIRCUITS EMPLOYING SWITCHES SUCH AS FIELD-EFFECT DEVICES

John Evert Meyer, Trenton, N.J., assignor to RCA Corporation

Filed May 11, 1970, Ser. No. 36,190
Int. Cl. H03k 17/00
U.S. Cl. 307—251 6 Claims

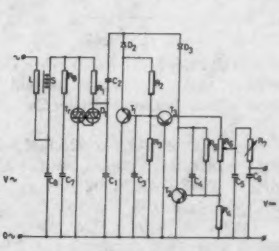


A decoder employing switches such as metal oxide semiconductor (MOS) field-effect devices and diodes in a number of series circuits, each such circuit forming a ring. In the absence of strobe and strobe signals, one diode in one series circuit connects the decoder output terminal to ground. In the presence of strobe and strobe signals, the output terminal is disconnected from ground and, if the control voltages applied to certain of the devices in certain of the series circuits all represent the desired binary value, the strobe signal is conducted via certain of the devices in said one series path to said output terminal.

3,676,706
A.C. CONTROL DEVICES

Robert Ronald Laupman, Wijchen, Netherlands, assignor to N.V. Avco, Wijchen, Netherlands

Filed Jan. 5, 1971, Ser. No. 104,011
Claims priority, application Netherlands, Jan. 9, 1970, 00280/70
Int. Cl. H03k 17/00
U.S. Cl. 307—252 B 7 Claims



A circuit arrangement for controlling an alternating current through a load in response to a direct-current control signal applied to its input terminals is provided with a specific organization of a firing circuit arrangement comprising the three

basic transistor circuit configurations. With a suitable dimensioning of the resistors and capacitors associated with the three transistors, a desired voltage waveform is produced serving to fire a semi-conductor switch element through its gate control terminal in dependence on the D.C. control signal applied to the input of said firing circuit arrangement.

3,676,707

JITTER FREE TRIGGER PULSE GENERATOR

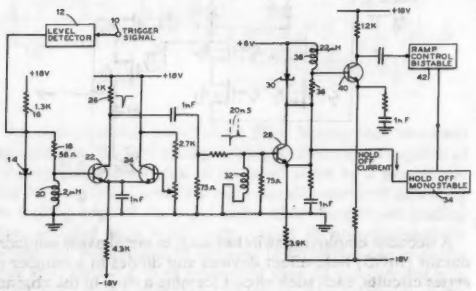
John Harold Conrad; Anthony Edward St. Aubyn Reynolds, and Edward George Gadd, all of Farnborough, England, assignors to The Solartron Electronic Group Limited, Farnborough, England

Filed March 10, 1971, Ser. No. 122,876

Claims priority, application Great Britain, March 12, 1970, 11,998/70

Int. Cl. H03k *5/00, 3/315*

U.S. Cl. 307—260 **4 Claims**



In a trigger pulse generator for an oscillator jitter is liable to occur in the trigger pulses because of uncertainties in the timing of the end of the hold-off signal relative to the instants at which a trigger signal reaches a trigger level. Jitter is eliminated by arming an output circuit when the hold-off signal ends and a first pre-trigger pulse is generated in response to the trigger signal reaching the trigger level.

The output circuit generates a trigger pulse, when it is armed, in response to a second pre-trigger pulse which is generated in timed relation to the trigger signal reaching the same trigger level, either that is by delaying the first pre-trigger pulse a predetermined amount or by generating the first and second pre-trigger pulses off opposite going edges respectively of the squared trigger signal.

3,676,708

PULSE GENERATOR FOR FAST RISE-TIME PULSES

Kozo Uchida, Tokyo-to, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha alkala Iwatsu Electric Co.,, Tokyo-to, Japan

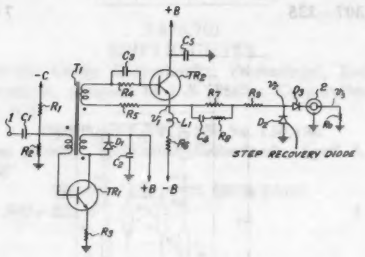
Filed May 19, 1969, Ser. No. 825,864

Claims priority, application Japan, May 21, 1968, 43/34201; May 21, 1968, 43/34202; May 21, 1968, 43/34203; May 21, 1968, 43/34204

Int. Cl. H03k *5/12, 3/26*

U.S. Cl. 307—263 **6 Claims**

Disclosed herein is a pulse generator for producing repetitive uni-directional pulses or single signal-initiated unidirectional pulses by use of pulse generation means, in which output pulses each having an extremely short rise time can be obtained by applying the output pulses of the pulse generation means to a step recovery diode to render the diode non-conductive during such pulses; while the step recovery diode is



otherwise maintained conductive, in the absence of a pulse from the pulse generation means, by flowing a forward dc current therethrough.

3,676,709

FOUR-PHASE DELAY ELEMENT

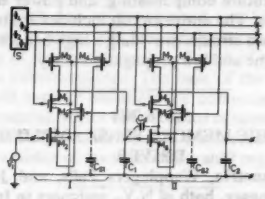
Jean Martial Ducamus, Paris, and Claude-Jane Fernandez, Montrouge, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1971, Ser. No. 141,494

Claims priority, application France, May 13, 1970, 7017392

Int. Cl. H03k *3/26*

U.S. Cl. 307—279 **3 Claims**



A four-phase logic delay circuit using two cascaded stages of field-effect transistors where each stage has two cascaded field-effect transistors for the storage of logic signals and two additional field-effect transistors for the isolation of the storage field-effect transistors for the duration of two phases of the four-phase signal.

3,676,710

LOW-LEVEL SIGNAL DETECTOR CIRCUIT

David A. Jones, Burnsville, Minn., assignor to Control Data Corporation, Bloomington, Minn.

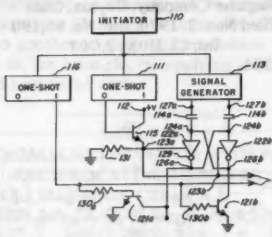
Filed Feb. 16, 1971, Ser. No. 115,359

Int. Cl. H03k *3/26, 3/286*

U.S. Cl. 307—289 **8 Claims**

Method and apparatus for increasing the sensitivity of several flip-flop designs to duplex binary signals too weak to affect the state of the flip-flop during normal operation. For detecting practically any type of weak signal, sensitivity can be dramatically improved by dropping power to the flip-flop and then reapplying power while the signal is being applied to the flip-flop terminals. In addition, when bipolar pulses are to be detected, capacitors interposed between the signal source and

the flip-flop terminals can be grounded during the first quarter of the signals and disconnected from ground for the remaining



portion of the signal. This effectively doubles the maximum signal voltage applied to each flip-flop terminal.

3,676,711

DELAY LINE USING INTEGRATED MOS CIRCUITRY

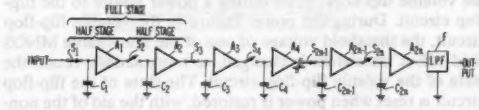
Richard Wilfred Ahrons, Somerville, N.J., assignor to RCA Corporation

Filed Feb. 19, 1970, Ser. No. 12,613

Claims priority, application Great Britain, Nov. 17, 1969, 56,222/69

Int. Cl. H03k *17/28*

U.S. Cl. 307—293 **10 Claims**



"Bucket brigade" type of delay line is realized in integrated circuit form with MOS devices serving all switching, storage, amplifier and amplifier load functions. Configurations wherein devices are all of the same channel conductivity type are disclosed, as well as configurations employing complementary devices. Certain embodiments utilize a pair of complementary switching waveforms for interleaved switching operations, while in other embodiments a single switching waveform suffices. Modifications for minimizing coupling of the switching signal into the delayed signal are also shown.

3,676,712

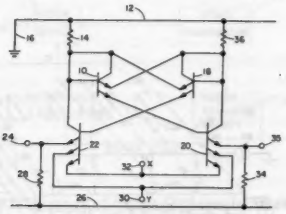
MONOLITHIC NON-SATURATING STORAGE CIRCUIT

Donald D. Schendel, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed March 22, 1971, Ser. No. 126,598

Int. Cl. H03k *3/286*

U.S. Cl. 307—291 **10 Claims**



Flip-flop circuits have many uses in electronics and particularly in logic circuits. Since, in logic circuits, speed of operation is highly desirable, a flip-flop circuit which can change its state in a very short period of time is desirable. A flip-flop circuit is disclosed including means to prevent either of the transistors comprising the flip-flop circuit from becoming saturated during operation thereof, whereby the speed of operation of the flip-flop circuit is increased.

3,676,713

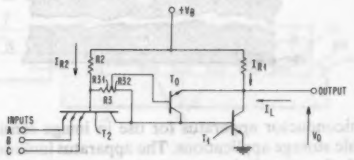
SATURATION CONTROL SCHEME FOR TTL CIRCUIT

Siegfried K. Wiedmann, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 23, 1971, Ser. No. 136,700

Int. Cl. H03k *17/04*

U.S. Cl. 307—300 **2 Claims**



This specification discloses a technique of saturation control for a transistor transistor logic (TTL) circuit which is also applicable to other types of circuits. The saturation control device is a transistor whose emitter is connected to the collector of the output transistor of the TTL circuit, its collector is connected to the base of the output transistor for the TTL circuit and its base is connected through a resistive divider network between the base and collector of the input transistor for the TTL circuit. This saturation control transistor is formed in the same isolation pocket with the input transistor for the TTL circuit by providing the input transistor with an extended base region and an additional emitter diffusion which is spaced from the other emitter diffusions and the collector contact for the input transistor so that the sections of the extended base region between the additional emitter diffusion and the other emitter diffusions and between the additional emitter diffusion and the collector contact form the resistors of the divider network.

3,676,714

SEMICONDUCTOR DEVICE

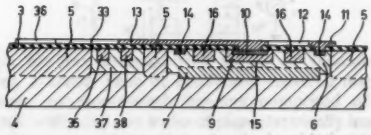
Bernardus Leonardus Wensink, and Adriaan Cense, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed April 1, 1970, Ser. No. 24,558

Claims priority, application Netherlands, April 15, 1969, 6906105

Int. Cl. H01l *19/00*

U.S. Cl. 307—303 **4 Claims**



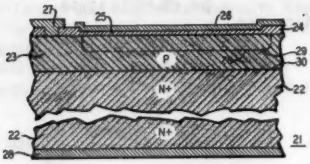
A p-n junction isolated integrated circuit bipolar transistor with means to prevent parasitic transistor action between the base of the transistor and the substrate due to accidental forward bias of the base-collector junction. Said means include an auxilliary region disposed in the collector region to collect minority carriers injected into the collector from the base during forward bias. Feedback means connected to the auxilliary region remove the forward bias voltage.

3,676,715

SEMICONDUCTOR APPARATUS FOR IMAGE SENSING AND DYNAMIC STORAGE

Samuel Brojdo, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 26, 1970, Ser. No. 50,198
Int. Cl. H011 *11/14, 15/00*
U.S. Cl. 307—304 13 Claims



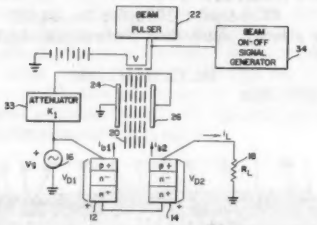
Semiconductor apparatus for use in image sensing and/or dynamic storage applications. The apparatus includes a matrix of basic functional elements, each element including an MIS surface portion and an underlying PN junction. Conduction paths associated with each row and column of the matrix enable interrogation of the basic elements in either word organized or bit organized fashion. In operation, minority carriers are temporarily stored in surface inversion layers associated with each MIS portion after having been photogenerated or electronically injected from the underlying PN junction. Interrogation is accomplished by removing the voltage across an MIS portion to release the stored minority carriers and reverse-biasing the underlying junction to collect the released carriers.

3,676,716

FAST SWITCH UTILIZING HYBRID ELECTRON-BEAM-SEMICONDUCTOR DEVICES

Donald J. Hanrahan, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 19, 1971, Ser. No. 144,955
Int. Cl. H01j *29/52*; H03k *17/56, 17/88*
U.S. Cl. 307—308 6 Claims



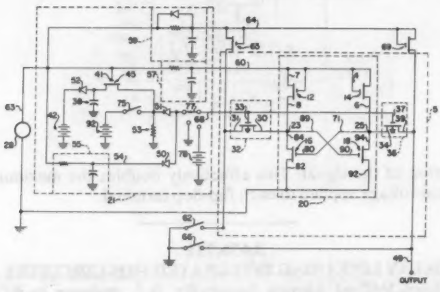
A fast switching device employing at least two semiconductor p-n junction devices in a back-to-back arrangement with the voltage which is to be switched applied across the semiconductor devices. If the output is to be a replica of the switched voltage, the latter is also applied to control an electron beam which irradiates one or both semiconductor devices when the switch is to be closed. A square-wave output can be produced by utilizing an electron beam which is not proportional to the switched voltage but is simply turned on and off in synchronism with it and has a constant value when it is on.

3,676,717

NONVOLATILE FLIP-FLOP MEMORY CELL

George C. Lockwood, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 2, 1970, Ser. No. 86,190
Int. Cl. H03k *23/08*
U.S. Cl. 307—304 15 Claims



The present invention relates to a nonvolatile flip-flop memory cell in which an alterable threshold voltage nonvolatile MNOS field effect transistor is connected to each bistable terminal of a volatile flip-flop circuit. The nonvolatile MNOS field effect transistors nonvolatilely retain the state of the volatile flip-flop circuit during a power failure to the flip-flop circuit. During the power failure to the volatile flip-flop circuit, the threshold voltage of one of the nonvolatile MNOS field effect transistors is changed, to nonvolatilely retain the state of the volatile flip-flop circuit. The state of the flip-flop circuit is reset when power is restored, with the aid of the nonvolatile MNOS field effect transistors.

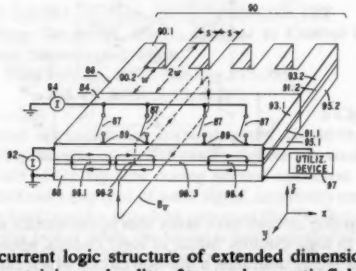
When a power failure to the volatile flip-flop circuit is sensed, a high negative potential is applied to the gates of the nonvolatile MNOS transistors to change the threshold of the nonvolatile MNOS transistor which is connected to the zero potential terminal of the volatile flip-flop circuit. The state of the volatile flip-flop circuit is retained in said nonvolatile MNOS field effect transistors. The binary bit of information nonvolatilely stored in the nonvolatile memory cell is read back into the volatile flip-flop circuit when power is restored.

3,676,718

SUPERCURRENT STRUCTURES UTILIZING MOBIL FLUX VORTICES

Philip Warren Anderson, New Vernon; Robert Carr Dynes, and Theodore Alan Fulton, both of Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 26, 1971, Ser. No. 128,445
Int. Cl. H03k *3/38*; G11c *19/00*
U.S. Cl. 307—306 41 Claims



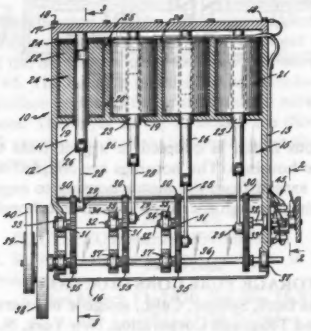
A supercurrent logic structure of extended dimensions is capable of sustaining a plurality of trapped magnetic field vor-

tices each of which supports one flux quantum. Such a vortex prefers to position itself in a region such that a local minimum of the sum of the magnetic energy plus the Josephson coupling energy is established. A variety of ways to create such preferred regions are disclosed. A vortex is moved from one such region to another in shift register fashion by applying a force thereto as, for example, by applying a local current or magnetic field near to the vortex.

3,676,719
ELECTROMAGNETIC MOTOR WITH PLURAL RECIPROCATING MEMBERS

Angelo A. Pecci, 1 Sixth Street, Clifton, N.J.

Filed July 22, 1971, Ser. No. 165,228
Int. Cl. H02k *7/06*
U.S. Cl. 310—24 **5 Claims**

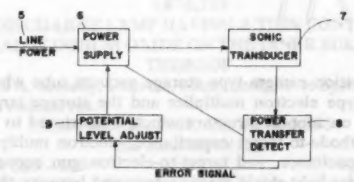


Apparatus for converting electrical energy into rotary motion for performing work, such as driving a wheeled vehicle. The apparatus includes a plurality of electromagnetic solenoids with the core of each solenoid being eccentrically connected to a driving gear which meshes with a driven gear carried by a drive shaft to gain a mechanical advantage and cause rotation of the drive shaft. The solenoids are energized sequentially to cause continuous rotation of the drive shaft.

3,676,720
METHOD AND APPARATUS FOR CONTROLLING FREQUENCY OF PIEZOELECTRIC TRANSDUCERS

Charles C. Libby, and Raymond C. McDaniel, both of Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Jan. 26, 1971, Ser. No. 109,816
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **4 Claims**

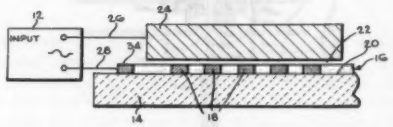


The resonant frequency of a high Q piezoelectric transducer is selectively varied by adjusting the magnitude of the supply voltage for the said transducer. In one apparatus embodiment, the supply voltage to the transducer is automatically adjusted, so as to maintain the resonant frequency of the transducer nearly constant in the presence of external factors tending to shift the said frequency. The system is especially suited to transducers operating from a constant frequency supply system.

3,676,721
COMPOSITE SURFACE-WAVE TRANSDUCER

Anthony P. Van Den Heuvel, Homewood; Ronald W. Richter, Chicago, both of Ill., and Shrinivas G. Joshi, Bangalore, India, assignors to IIT Research Institute, Chicago, Ill.

Filed Aug. 28, 1970, Ser. No. 67,767
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.3 **16 Claims**

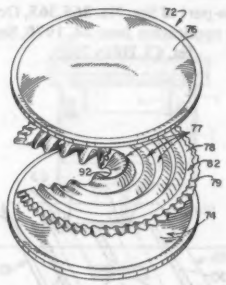


A transducer for generating and detecting surface elastic waves in a piezoelectric material may include a metalic grating on the material forming one electrode of the transducer and a counter-electrode separated from the grating by a dielectric layer.

3,676,722
STRUCTURE FOR BIMORPH OR MONOMORPH BENDERS

Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 863,836, Oct. 6, 1969, abandoned. This application April 15, 1971, Ser. No. 134,279
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.6 **14 Claims**

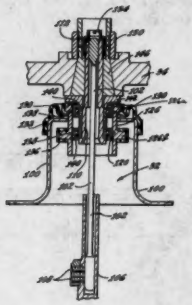


Bimorph benders comprised of a pair of piezoelectric wafers with a center vane of conductive material disposed therebetween or monomorph benders comprised of one piezoelectric wafer and one wafer of piezoelectrically inactive material with a center vane of conductive material disposed therebetween have one portion rigidly held in place and another portion coupled to move or be moved by a mechanical load thereby applying a distribution of bending forces to the bender. By selectively constructing the center vane so that the stiffness of the assembly varies in proportion to the magnitude of the bending force applied to the bender and by bending the wafers to conform to the shape of the center vane, increased coefficient of electromechanical coupling, strength, high frequency response, and linearity result.

3,676,723
HIGH SPEED CENTRIFUGE DRIVE ASSEMBLY

Kenneth G. Drucker, Astoria, Oreg., assignor to Bio-Consultants, Inc., South Gate, Calif.

Filed March 2, 1970, Ser. No. 15,761
Int. Cl. H02k 11/00
U.S. Cl. 310—68 B 9 Claims

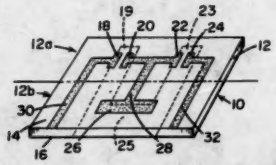


A drive assembly for a motor driven centrifuge, or other rotatable mechanisms, is provided which includes a resilient rotatably driven spindle. The rotating spindle and centrifuge rotor normally create gyroscopic effects so that the rotor is rotated with minimal radial vibration about a mass center, even in the presence of some unbalancing of the rotor assembly. The apparatus also includes contact means associated with the spindle for providing a desired electrical control signal should the rotor unbalancing exceed a safe threshold. The control signal is used normally to de-energize the drive motor and to cause the rotor to stop.

3,676,724
MULTI-ELEMENT PIEZOELECTRIC CIRCUIT COMPONENT

Don A. Berlincourt, Chagrin Falls, and Kendall A. Pim, Cleveland Heights, both of Ohio, assignors to Vernitron Corporation, Bedford, Ohio

Continuation-in-part of Ser. No. 865,365, Oct. 10, 1969, abandoned. This application June 24, 1970, Ser. No. 49,498
Int. Cl. H01v 7/00
U.S. Cl. 310—8.2 21 Claims

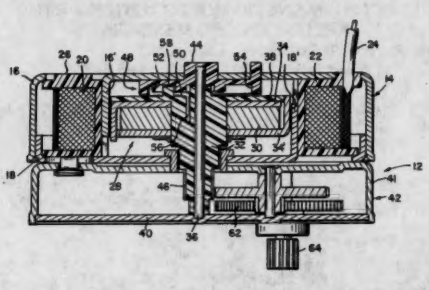


There is disclosed a multi-element piezoelectric circuit component comprising a thin wafer of material, at least a part of which is piezoelectric, having two major surfaces whereon a plurality of spaced electrodes and counter electrode means provides in coaction with the intervening material a combination of two or more elements consisting of acoustically isolated coupled mode filters, acoustically isolated resonators and capacitors. Acoustical isolation of the elements can be effected by use of damping or lossy material on the wafer in addition to spacial arrangements of the electrodes. Capacitor elements are formed on a section of the wafer having little or no piezoelectric activity.

3,676,725
MEANS CONNECTING A SYNCHRONOUS MOTOR TO A GEAR TRAIN HOUSING

Joseph E. Wiser, and Peter H. Gerhardt, both of Indianapolis, Ind., assignors to P. R. Lallory & Co., Inc., Indianapolis, Ind.

Filed Sept. 23, 1970, Ser. No. 74,599
Int. Cl. H02k 5/00
U.S. Cl. 310—89 5 Claims

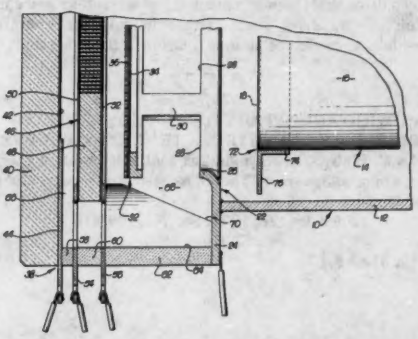


A synchronous motor is coupled to a gear train through their respective housings. The housings are coupled together by tabs which extend from the motor housing to engage the gear train housing through apertures formed in its housing.

3,676,726
STORAGE TUBE CONSTRUCTION

Johann Battesta Beeli, Sylmar, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,524
Int. Cl. H01j 31/26
U.S. Cl. 313—65 11 Claims



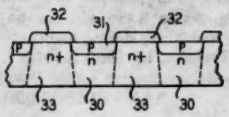
A television camera-type storage vacuum tube wherein a channel-type electron multiplier and the storage target are mounted on support structure which is apertured to reduce photo cathode-to-target capacitance, electron multiplier-to-target capacitance, and target-to-electron gun capacitance; and annular light shield means interposed between the electron gun and apertured support structure to prevent light emanating from the cathode heater of the electron gun from penetrating through the support structure to the photo multiplier section of the tube. The reduced capacitance produces improved frequency response of the tube, while the light shield means cooperates to preserve low light level performance and hence good contrast, resolution and sensitivity of the tube.

3,676,727

DIODE-ARRAY TARGET INCLUDING ISOLATING LOW RESISTIVITY REGIONS

John Vincent Dalton, Oldwick, N.J., and Edward Franklin Labuda, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 30, 1970, Ser. No. 23,871
Int. Cl. H01j *31/26, 31/28;* H01l *15/00*
U.S. Cl. 313—66 5 Claims



The specification describes an improved diode array target for an electron beam storage tube. The target is an improvement of the device described in U.S. Pat. Nos. 3,403,284 and 3,419,746. The target is modified so as to include an N^+ layer in the surface region of the semiconductor substrate between the diodes. This layer serves to isolate the diodes, to reduce the dark current generation, and to increase the resolution of the camera tube.

3,676,728

POLYSPECTRAL FLUORESCENT LAMP

Willy P. Schreurs, Danvers, Mass., assignor to Sylvania Electric Products Inc.

Filed March 12, 1970, Ser. No. 18,815
Int. Cl. H01j *61/20, 61/44*
U.S. Cl. 313—109 3 Claims

The inner surface of a tubular fluorescent lamp has at least two separate and distinct phosphor coatings on different longitudinal segments thereof, the color of light emitted by each phosphor coating differing from that of the other. The lamp is rotatably mounted in a fixture having an aperture parallel to the lamp. By suitable rotation of the lamp within the fixture, light from either of the phosphors may be preferentially directed through the aperture for illumination purposes.

3,676,729

ARC DISCHARGE LAMP HAVING A THIN CONTINUOUS FILM OF INDIUM OXIDE ON THE INNER SURFACE THEREOF

Richard A. Menelly, Danvers, Mass., assignor to Sylvania Electric Products Inc.

Filed June 23, 1969, Ser. No. 835,753
Int. Cl. H01j *61/35*
U.S. Cl. 313—109 1 Claim

An arc discharge lamp has a clear glass envelope on the inner surface of which is disposed a thin, continuous film of indium oxide. The film transmits visible light but absorbs ultraviolet radiation. A phosphor coating may be disposed on the indium oxide film.

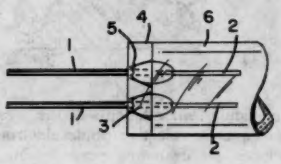
In order to form the film, a solution of an indium salt of a pre-selected organic acid is applied to the glass, dried under controlled conditions and heated to a predetermined temperature to convert the indium salt to indium oxide.

3,676,730

SEAL ARRANGEMENTS FOR LAMPS

Frederick A. Loughridge, Manchester; Wilfrid G. Matheson, Marblehead, and Edmund M. Passmore, Wilmington, all of Mass., assignors to Sylvania Electric Products Inc.

Filed Dec. 29, 1969, Ser. No. 888,299
Int. Cl. H01j *5/32*
U.S. Cl. 313—318 7 Claims



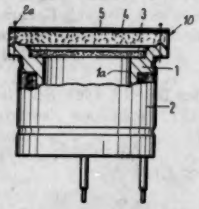
Lead-in wires of lamps are disposed in a vitreous silica envelope through the use of a graded seal in which two abutting segments of refractory metal wires are coated with a cermet formed of an admixture of powdered refractory metal and vitreous silica. These lead-in wires are disposed in an aperture in a wafer which, in turn, is sealed to a vitreous silica envelope.

3,676,731

DISPENSER CATHODE STRUCTURE

Horst Hofmann, and Helmut Katz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed March 3, 1971, Ser. No. 120,637
Claims priority, application Germany, March 5, 1970, P 20 10 479.4
Int. Cl. H01j *1/14, 19/06*
U.S. Cl. 313—346 DC 4 Claims



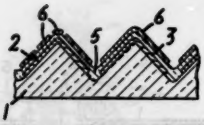
A dispenser MK-type cathode structure adapted for prolonged storage and handling with subsequent activation and a method of producing the same whereby a supply source material capable of yielding barium, such as alkaline-earth oxides or carbonates, i.e., barium carbonates or barium oxide, is positioned in an open-ended storage chamber of a suitable member and a porously sintered cover member seals the supply source material within the storage chamber. The cover member is composed of tungsten and includes coatings of osmium and/or rhenium on its active or emission surface. Such cover member is further provided with a tightly adhering protective coating that is vapor and humidity impermeable and is composed of a hydrophobic material, such as paraffin or methyl mathacrylate resin or other heat-vaporizable hydrophobic material.

3,676,732

PHOTO-ELECTRONIC IMAGING APPARATUS

Dennis Gabor, London, England, assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Division of Ser. No. 644,248, June 7, 1967, Pat. No. 3,509,276.
This application Sept. 8, 1969, Ser. No. 868,263
Int. Cl. H01j 29/46
U.S. Cl. 315—10 7 Claims



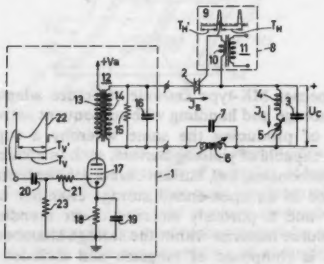
In the particular embodiments of the invention described herein, a frequency selective photo-electronic image transducer includes an insulating plate having minute closely spaced prismatic ridges, the surfaces of which are covered with a capacitive sandwich structure comprising an electrode coated on the plate, an insulating layer and a photo-emissive material at the outer surface, the latter being in the form of a mosaic of isolated elements. The electrodes on alternate ridges, or in another form on corresponding sides of every ridge, are connected together and to an alternating potential source operating at the desired frequency of selection, the other electrodes being grounded. An illuminated object containing light modulated with information at the selected frequency is imaged onto the surface of the plate intermittently and, between exposures, a line scan tube image onto the surface reads out the charge accumulated at the various elemental areas in succession. The frequency-selected image is then reproduced on a display tube. In an alternative embodiment, light from an image of the object is conveyed to the photo-sensitive plate by a fiber-optics array and a mask is provided to compensate for inequalities in the sensitivities of the photo-emissive elements.

3,676,733

CIRCUIT ARRANGEMENT FOR GENERATING A LINE FREQUENCY PARABOLICALLY MODULATED SAWTOOTH CURRENT OF FIELD FREQUENCY THROUGH A FIELD DEFLECTION COIL

Hannspeter Eulenberg, Bauweg, Germany, and Gerardus Antonius Wilhelmus Van Veldhoven, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 13, 1969, Ser. No. 832,970
Claims priority, application Netherlands, June 22, 1968, 6808845
Int. Cl. H01j 29/70
U.S. Cl. 315—27 GD 12 Claims



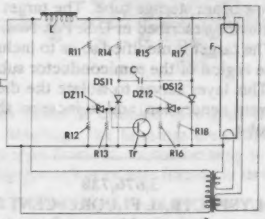
A TV deflection system that includes a circuit for generating a sawtooth field current parabolically modulated at the line frequency in the field deflection coil. The circuit includes a resonant circuit composed of a capacitor and the field deflection coil with a resonant frequency that is approximately one fifth of the line frequency for deriving the parabolic modulation component of line frequency. The sawtooth field deflection generator periodically excites the resonant circuit via a bidirectional electronic switch that is periodically switched in synchronism with the line flyback pulses.

3,676,734

ELECTRIC CIRCUIT FOR RAPIDLY IGNITING A DISCHARGE TUBE

Tetsuji Shimizu, and Makoto Iwakura, both of Nagoya, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi prefecture, Japan

Filed Nov. 14, 1969, Ser. No. 876,898
Claims priority, application Japan, Nov. 15, 1968, 43/83232
Int. Cl. H05b 37/00
U.S. Cl. 315—200 17 Claims



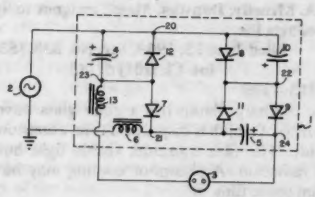
This invention discloses a circuit for rapidly and certainly igniting a discharge tube such as a fluorescent lamp, mercury-arc lamp, neon tube lamp or the like, which comprises a capacitor adapted to effect charge or discharge thereof at substantially the peak value of AC wave of power source by the action of a switching means, a transformer or ballast choke coil which is adapted to produce high voltage pulse in response to said charge or discharge of the capacitor, said high voltage pulse being applied to a discharge tube at its electrodes which are preliminarily heated thereby to ignite the discharge tube. According to this invention, simultaneously when a power source is closed, a high voltage is generated at substantially the peak value of positive and/or negative half cycle of the AC power source by the operation of a specific circuit, thereby enabling the discharge tube to be rapidly or instantaneously ignited. The present circuit is very useful for various commercial purposes.

3,676,735

RESONATOR BALLAST FOR ARC DISCHARGE LAMPS

William J. Roche, Merrimac, Mass., assignor to Sylvania Electric Products Inc.

Filed Sept. 25, 1969, Ser. No. 860,985
Int. Cl. H05b 37/00, 39/00, 41/14
U.S. Cl. 315—207 3 Claims



An alternating current electronic ballast for an arc discharge lamp has two sets of capacitors and diodes arranged

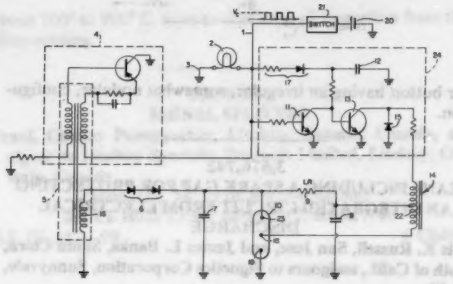
so that each set of capacitors can be charged and discharged only during opposite polarities of an AC supply. The ballast can develop a high voltage for starting the lamp and also can efficiently regulate the current flow through the lamp.

3,676,736

AIRCRAFT FLASHER UNIT

Robert L. Starer, Rydal, Pa., assignor to Physitech, Inc., Willow Grove, Pa.

Filed June 6, 1969, Ser. No. 831,113
Int. Cl. B64d 47/06
U.S. Cl. 315—241 R **8 Claims**



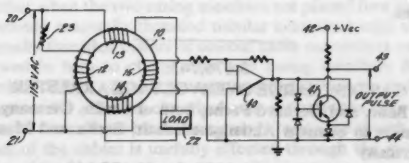
Apparatus is disclosed which provides for the pulsing of a plurality of high intensity white lights, which lights are synchronized to flash simultaneously, and during the off period of navigation lights already installed on the airplane. Each high intensity light is controlled by a transistorized circuit coupled to the power supply lead which supplies the navigation light. Said circuit charges two storage capacitors and holds the charge on same during the on period of the navigation lights. During the off period of same, a short circuit is presented, causing a discharge of one of the capacitors, which acts to trigger the high intensity light, the burst of light being energized by the discharge of the other capacitor.

3,676,737

GROUND-FAULT DETECTOR USING SQUARE HYSTERESIS LOOP REACTOR CORE

Ruben D. Garzon, Malvern, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed April 5, 1971, Ser. No. 131,253
Int. Cl. H02h 3/32, 3/16
U.S. Cl. 317—18 D **7 Claims**



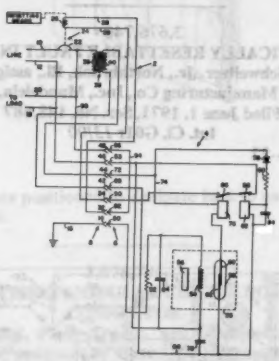
A ground-fault detector for determining ground-fault currents of less than 5 milliamperes consists of a square hysteresis loop core which is biased by a biasing winding which supplies core loss such that a small change in magnetizing force due to a small current change will cause a large flux change. Two control windings having an identical configuration and connected to induce opposing magnetomotive forces are formed on the core and are connected in series with an input circuit and are connected to opposite sides of a load which might develop a ground fault. An output winding on the core is then connected to an operational amplifier which, in turn, produces a triggering signal output for controlling a circuit interrupter or relay in response to flux change due to a ground-fault current detected as a difference of current in the two control windings.

3,676,738

SAFETY DEVICE FOR PREVENTING ELECTRIC SHOCK

Warren F. Scanlan, Philadelphia, Pa., assignor to United Kingdom Atomic Energy Authority, London, England

Filed March 24, 1970, Ser. No. 22,152
Int. Cl. H02h 3/16
U.S. Cl. 317—18 R **8 Claims**



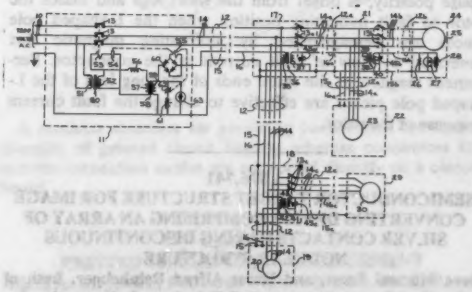
A ground fault interrupter circuit utilizes the potential difference between the neutral supply line and ground to sense faults. An ordinary resettable magnetic circuit breaker is used, but delay circuitry prevents immediate reenergization of the breaker coil resulting from a surge when resetting is attempted.

3,676,739

MINE POWER SYSTEM GROUND CONTINUITY CHECK CIRCUIT

Donald E. Neuhouser, Fort Wayne, Ind., assignor to General Electric Company

Filed Sept. 7, 1971, Ser. No. 178,338
Int. Cl. H02h 3/16
U.S. Cl. 317—18 C **9 Claims**



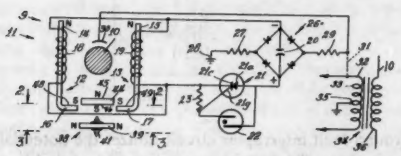
A ground cable continuity check circuit for a power supply cable system having a grounding and a pilot conductor electrically interconnected remotely from the power supply. A source of electrical energy for the check circuit is provided through a constant current transformer having its secondary connected between the grounding and pilot conductors. A circuit including the coil of an undervoltage relay and the contacts of a current relay is connected across the constant cur-

rent transformer primary. The current relay coil is connected in series with the constant current transformer secondary and the grounding and pilot conductors. A voltage breakdown device is connected across the constant current transformer secondary to divert current from the current relay coil when a high impedance appears in the ground circuit for opening the current relay contacts to disable the under voltage relay. The power supply system may have a main cable and at least one branch cable in which case the grounding and pilot conductor loops of the main cable and branch cable are interconnected by a current transformer having one coil connected in the main grounding and pilot conductor loop and the other coil connected between the grounding and pilot conductors of the branch circuit.

3,676,740
AUTOMATICALLY RESETTABLE FAULT INDICATOR

Edmund O. Schweitzer, Jr., Northbrook, Ill., assignor to E. O. Schweitzer Manufacturing Co., Inc., Mundelein, Del.

Filed June 1, 1971, Ser. No. 148,687
Int. Cl. G01r *13/00*
U.S. Cl. 317—22 **10 Claims**



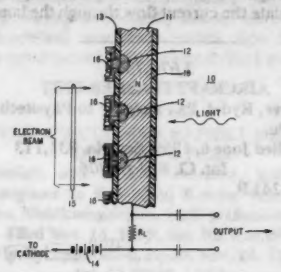
A pair of opposed L-shaped pole pieces of demagnetizable low coercive force material is arranged to embrace an alternating current carrying conductor with the short legs in opposition and the long legs carrying reset windings which are energized with unidirectional current from a capacitor that is charged by a rectifier energized from a capacitor plate electrostatically related to the conductor or a secondary winding of a transformer the primary winding of which is energized from the conductor. A four pole fault indicating rotor is held in a normal position by the magnetic fields from the short legs. A biasing permanent magnet, having magnetic poles of opposite polarity, is offset from the short legs and biases the rotor to fault indicating position when the L-shaped pole pieces are demagnetized by alternating magnetic flux generated by flow of fault current in the conductor. Permanent magnets at the distal ends of the long legs of the L-shaped pole pieces are effective to change the fault current response of the rotor.

3,676,741
SEMICONDUCTOR TARGET STRUCTURE FOR IMAGE CONVERTING DEVICE COMPRISING AN ARRAY OF SILVER CONTACTS HAVING DISCONTINUOUS NODULAR STRUCTURE

Steve Michael Forst, and Horst Alfred Reinheimer, both of Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1970, Ser. No. 96,352
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317--234 R **4 Claims**

Conductive metal islands are applied over each diode region and the adjacent oxide to minimize adverse charge build up on the insulating layer of the target surface of a semiconductor diode array target structure. These conductive metal islands are made by the plating of silver from a silver nitrate and hydrofluoride bath. The process produces a deposited

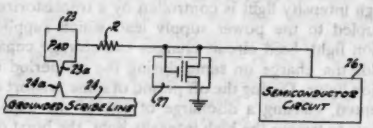


silver button having an irregular, somewhat nodular, configuration.

3,676,742
MEANS INCLUDING A SPARK GAP FOR PROTECTING AN INTEGRATED CIRCUIT FROM ELECTRICAL DISCHARGE

Lewis K. Russell, San Jose, and James L. Banks, Santa Clara, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed May 24, 1971, Ser. No. 146,055
Int. Cl. H02h *1/04;* **H05f** *3/00*
U.S. Cl. 317—33 R **12 Claims**



An integrated circuit chip has one or more semiconductor devices and one or more bonding pads on the chip. The one or more bonding pads are electrically coupled to the semiconductor devices. A conductor which is adapted to be connected to a reference potential is also disposed on the integrated circuit chip. The conductor has a portion of its periphery in proximity to the portion of the periphery of a bonding pad and cooperates therewith to form a spark gap for protecting the semiconductor devices against electrical discharges. The proximate portions of the peripheries of the bonding pad and the conductor can be rectilinear or formed in tooth-like projections.

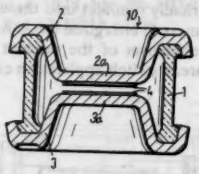
3,676,743
GAS-DISCHARGE OVERVOLTAGE ARRESTER

Alex Bahr, and Gerhard Peche, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 24, 1970, Ser. No. 75,140
Claims priority, application Germany, Oct. 3, 1969, P 19 50 090.4
Int. Cl. H02h *9/06*
U.S. Cl. 317—61 **10 Claims**

A voltage overload arrester comprising a pair of shaped electrodes having surface portions in spaced adjacent relation to each other and gas impermeably sealed within an insulating housing. The adjacent surface portions of each electrode are provided with a thin coating of an alloy of a material having a high electron emission ability, such as Ba, and a material having a stabilizing effect on the electron work function of such

emission material, such as Al. The method comprises forming the alloy-coated electrodes and subjecting them to heat of

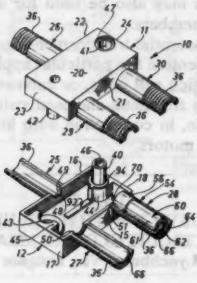


about 700° to 900° C. so as to eliminate all impurities from the alloy coating.

3,676,744
SIGNAL SPLITTER

Frank Chester Pennypacker, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Limited, Lindsay, Ontario, Canada

Filed Aug. 10, 1970, Ser. No. 62,561
Int. Cl. H01r *13/46;* **H01p** *5/12;* **H03h** *7/46*
U.S. Cl. 317—99 **6 Claims**



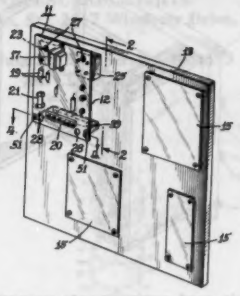
A connector box for connecting the individual electrodes of a plurality of coaxial cables and especially useful as a splitter box for a television antenna lead-in comprises a two-part casing. Mating upper and lower casing members are cast with corresponding semi-cylindrical out-ward extensions which fit together when the two casing members are placed face to face to provide externally threaded tubular extensions onto which internally threaded collars of coaxial cable connectors can be screwed in turn to clamp such two casing members firmly together. Sleeve connectors are provided within the tubular extensions for effecting electrical connection to the core electrodes of the cables while connection between the sheath electrodes of the cables is usefully effected through the metallic casing of the connector box.

3,676,745
ELECTRONIC ASSEMBLY UTILIZING THERMAL PANEL FOR HEAT SINK

John C. Traweek, 9 Kensington Drive, Deerfield, Ill.

Filed Sept. 4, 1970, Ser. No. 69,691
Int. Cl. H02b *1/04;* **H05k** *7/20*
U.S. Cl. 317—100 **1 Claim**

An improved heat sink for dissipation of heat in an electronic assembly is provided. The assembly includes a printed circuit board on which components including various heat developing components are mounted. The heat developing components are contained or encapsulated in respective

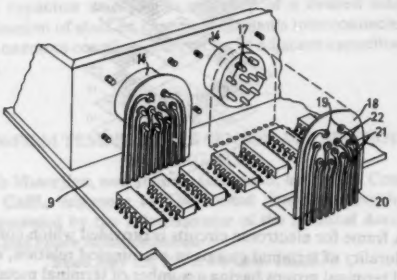


blocks which are positioned to dissipate heat to an associated mounting panel.

3,676,746
COMPATIBLE MODULAR CIRCUIT BOARD CONNECTOR

Georges Kassabgi, Paris, France, and Giampiero Compare, Milano, Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Dec. 23, 1970, Ser. No. 100,987
Int. Cl. H05k *7/02, 1/14*
U.S. Cl. 317—101 CC **6 Claims**



A modular structure for providing connections between a plurality of printed circuit boards, wherein connectors for remote connection cables are supported directly on a circuit board.

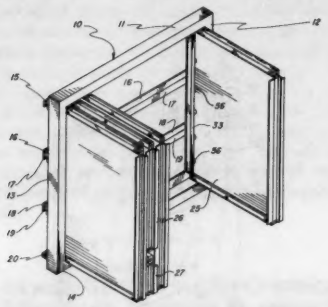
3,676,747
PRINTED CIRCUIT CARD ARRANGEMENT

Adam A. Jorgensen, Pittsford; William Bentley, Penfield, and Edward Urycki, Buffalo, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 809,072, March 21, 1969. This application Feb. 19, 1971, Ser. No. 117,026. The portion of the term of this patent subsequent to Feb. 23, 1988, has been disclaimed.
Int. Cl. H05k *5/02, 5/04*
U.S. Cl. 317—101 **28 Claims**

A printed circuit card arrangement including a printed cir-

cuit card and a rigid frame secured thereto, and a module of



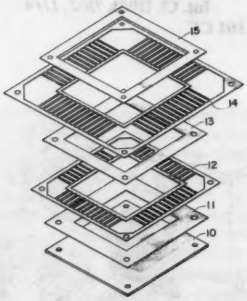
printed circuit card arrangements supported on a gate in spaced parallel arrangement.

3,676,748

FRAME STRUCTURES FOR ELECTRONIC CIRCUITS

Seihin Kobayashi, and Michihiro Torii, both of Shizuoka, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed March 30, 1971, Ser. No. 129,356
Claims priority, application Japan, April 1, 1970, 45/31218
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CM **9 Claims**



A frame for electronic circuits is provided which comprises a plurality of terminal groups in a laminated relation, each of said terminal groups having a number of terminal metal members arranged substantially on the same plane, and a plurality of insulated frame members sandwiching said terminal groups, each of said terminal metal members being connected at its inner end to an associated conductive wire of the electronic circuit and projected at its outer end to the outside of said frame members.

3,676,749

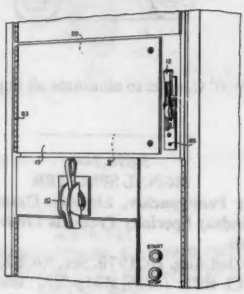
SWITCH-OPERATING MECHANISM WITH PARTICULAR APPLICATION THEREOF TO POTENTIAL-TRANSFORMER DISCONNECTING ASSEMBLY

John R. Wilson, Darien, and Sadig A. Sharliff, Hickory Hills, both of Ill., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 28, 1970, Ser. No. 84,752
Int. Cl. H02b *1/18;* **H01h** *9/22*
U.S. Cl. 317—103 **10 Claims**

An improved switch-operating mechanism is provided for translating linear motion of an actuating member, such as a handle mechanism, for example, into the rotary motion of a tray, or other rotatable member, which may carry, for example, one or more rotatably-actuated switch members. The switch members may take the form of movable finger assemblies, which electrically connect into the circuit one or more potential transformers to energized lines. Additionally, the improved switch mechanism of the present invention may be utilized for load-break switch application capable of interrupting load currents, or, in addition, the switch mechanism of the present invention may also be used for actuating non-load-breaking switch members.

The rotatable potential-transformer disconnecting assembly of the present invention has particular application to enclosed switchgear, in which cell units, or cabinets, are utilized, and stacked vertically for metal-enclosed switch-gear assemblies used, for example, in connection with line starters for controlling electrical motors.

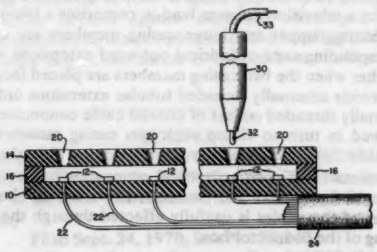


3,676,750

DATA INPUT DEVICE WITH HAND-HELD SELECTIVE CIRCUIT CLOSING MEANS

John D. Hawks, Lynchburg, Va., assignor to General Electric Company

Filed Sept. 15, 1970, Ser. No. 72,343
Int. Cl. H01r *9/08*
U.S. Cl. 317—112 **1 Claim**



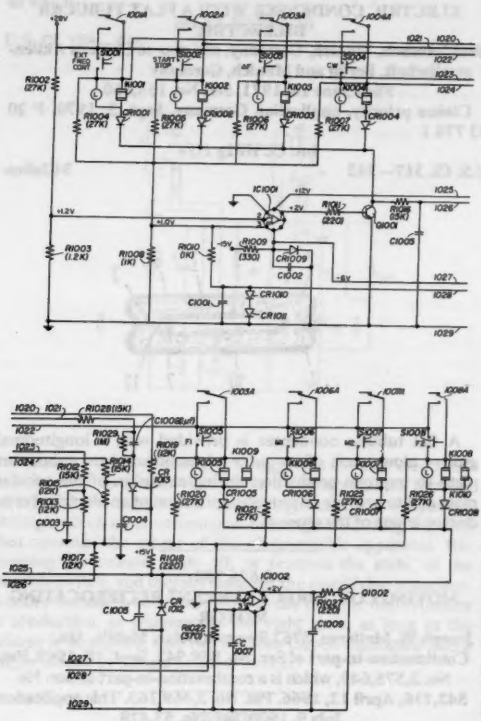
A personal data input device has a base plate with contacts, each of which represents a selected character, and a face plate positioned above the base plate. The face plate has an opening adjacent each contact so that a hand-held stylus can be inserted through a selected opening to engage or operate the corresponding contact, and thereby receive data which operates an encoder. The stylus can either close an electrical circuit to the selected contact by engagement, or can operate the contact by motion or other means.

3,676,751

SELECTION CIRCUITRY

Jerry Hausner, Flushing, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,778
Int. Cl. H01h 47/04
U.S. Cl. 317—137 3 Claims



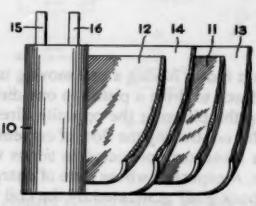
A broad band high frequency sweep generator is disclosed wherein the operating modes and critical frequencies are selected by pushbutton actuated switches. The switches are interconnected in order to insure that each mode discretely controls operation of the generator and the critical frequencies required for any particular mode only are selected.

3,676,752

ALUMINUM ELECTROLYTIC CAPACITOR

Francis J. P. J. Burger, and Jie Chu Wu, both of Toronto, Ontario, Canada, assignors to Sprague Electric Company, North Adams, Mass.

Filed March 19, 1971, Ser. No. 126,234
Int. Cl. H01g 9/02
U.S. Cl. 317—230 5 Claims



Undesirable anodic side reactions in aluminum electrolytic capacitors are controlled by employing glycol-based electrolytes which include additives of less than 2 percent of selected alpha-hydroxy carboxylic acids and their salts.

3,676,753

ELECTRICAL CAPACITOR ASSEMBLY WITH REPLACEABLE UNITS

Rayford M. Norman, Sr., 2117 Windover Drive, N.E., Huntsville, Ala.

Filed June 3, 1971, Ser. No. 149,653
Int. Cl. H01g 9/08
U.S. Cl. 317—230 9 Claims

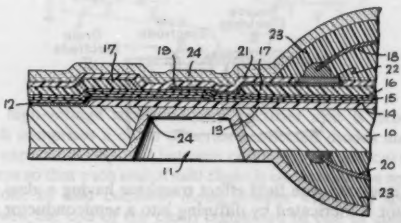
An electrical capacitor assembly consisting of a base having a plurality of like spaced pairs of electrical receptacles and a plurality of stacked cylindrical electrolytic capacitor elements, each element having a plurality of pairs of receptacle-like terminals passing through, end-to-end of the capacitor element and wherein one pair serves to electrically connect to the plates of the capacitor of that element and the other pairs serve as feed through conductors and receptacles for the other, like, stacked capacitor elements. In this fashion a composite capacitor assembly is made up of a desired selected combination of stacked capacitor elements interconnected by pin connectors coupling receptacles of adjacent capacitor elements.

3,676,754

THIN-FILM TEMPERATURE SENSOR AND METHOD OF MAKING SAME

Joseph Maserjian, and John R. Gatewood, both of La Crescenta, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed July 13, 1971, Ser. No. 162,230
Int. Cl. H01g 9/05
U.S. Cl. 317—230 18 Claims



A thin-film temperature sensor for fast response is disclosed, formed on a foil of tantalum using a self-supporting oxide of the foil as a substrate and using vapor-deposition

techniques to deposit a temperature-sensitive capacitor having a dielectric material sandwiched between layers of aluminum which serve as capacitor electrodes. An insulation layer of SiO_2 is deposited before the outer electrode, except over the active region of the capacitor, and a passivation film of Al_2O_3 is deposited over the entire device except an area where a lead is soldered to the outer electrode. The entire assembly is coated with Parylene C.

3,676,755

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAID DEVICE

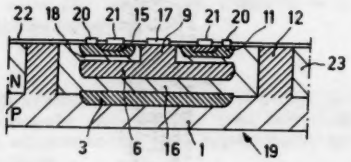
Rene Glaise, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,518

Claims priority, application France, Feb. 13, 1969, 6903480

Int. Cl. H01l *13/00*

U.S. Cl. 317—235 R **4 Claims**



A semiconductor device having a semiconductor body comprising a first region of a first conductivity type in the form of a layer adjoining a surface and situated on a second region of the body, a thyristor having four successive zones of alternate conductivity types being provided in the first region.

The device is characterized in that the thyristor is constructed from a first surface zone of the first conductivity type which is fully surrounded within the semiconductor body by a second surface zone of the second conductivity type, a buried zone of the second conductivity type situated below the second surface zone and separated from the second surface zone and from the said second region by the said first region, and a connection zone of the second surface zone and from the said second region by the said first region, and a connection zone of the second conductivity type separated from the second surface zone adjoining the surface which connection zone adjoins the said buried zone.

3,676,756

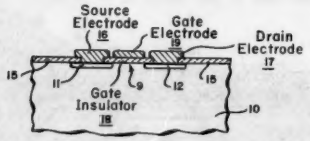
INSULATED GATE FIELD EFFECT DEVICE HAVING GLASS GATE INSULATOR

Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Filed Sept. 18, 1969, Ser. No. 859,012

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 **18 Claims**



An insulated gate field effect transistor having a glass gate insulator is fabricated by diffusing into a semiconductor substrate the impurities required to produce the channel, source and drain, exposing the substrate by etching away any remaining masking layer, forming a gate insulator of thin film ion impermeable glass on the exposed substrate and then metalizing and packaging the resulting device. Advantageously, the thin glass film is also used as a passivating layer. IGFET'S fabricated in this manner are significantly more resistant to contamination than are prior art devices using oxide insulated gates and passivating layers. As a consequence they are more economical to fabricate and more reliable in operation.

3,676,757

ELECTRIC CONDENSER WITH A FLAT TUBULAR DIELECTRIC

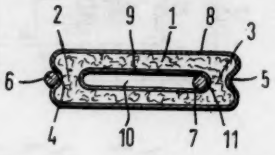
Emil Ramisch, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 16, 1971, Ser. No. 153,560

Claims priority, application Germany, Sept. 3, 1970, P 20 43 770.1

Int. Cl. H01g *1/14*

U.S. Cl. 317—242 **3 Claims**



A flat tubular condenser is provided with a longitudinal groove along each of its outer edges of an outer condenser plate to improve production during extrusion of the tubular plate and to provide improved connection of an electrical conductor in one of the grooves.

3,676,758

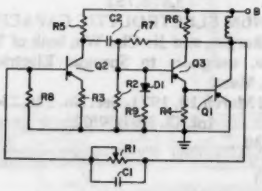
MOVING COIL DIRECT CURRENT RECIPROCATING MOTOR

Joseph W. Mathews, 3762 Swansea Drive, Mobile, Ala.

Continuation-in-part of Ser. No. 858,942, Sept. 18, 1969, Pat. No. 3,575,649, which is a continuation-in-part of Ser. No. 542,116, April 12, 1966, Pat. No. 3,469,163. This application July 9, 1970, Ser. No. 53,478

Int. Cl. H02k *33/18*

U.S. Cl. 318—128 **25 Claims**

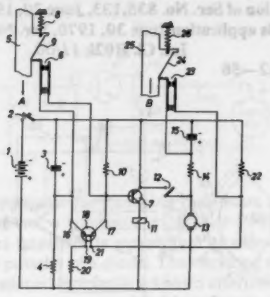


A direct current motor having a coil moving in a magnetic field to provide force to drive a piston in one direction and a spring for driving the piston in the opposite direction. A circuit is provided for controlling the flow of current through the coil, including a transistor connected in series with the coil and a d.c. source. A capacitor whose state of charge varies as a function of the back EMF generated by the coil is connected for controlling the conductivity state of the transistor as a function of the capacitor's state of charge.

3,676,759
ON-OFF MOTOR CONTROL PUSH BUTTON SWITCH FOR PHOTOGRAPHIC APPARATUS

Helmut Mayr; Richard Pelte; Theo Hubert, and Helmut Strasser, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Munich, Germany

Filed Sept. 22, 1970, Ser. No. 74,353
Claims priority, application Germany, Sept. 26, 1969, P 19 48 631.8
Int. Cl. H02p 1/10
U.S. Cl. 318—446 10 Claims

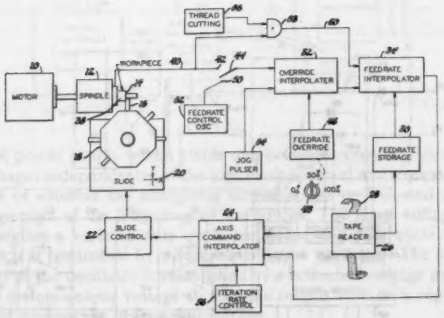


Pressing a release turns on, or triggers, a bistable electronic switch, such as a multivibrator or a semiconductor tetrode, which in turn renders an amplifying transistor conductive through which an electromagnet is energized, closing a switch that operates the motor of the photographic apparatus. Repressing the release shuts off, or reverses the state, of the bistable switch, and thereby turns off the amplifying transistor. Another release is so connected that the bistable multivibrator is conductive, or triggered to the right state, as long as the release is depressed. The two releases can be combined into a single release by using a selector switch.

3,676,760
FEEDRATE CONTROL SYSTEM

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation

Filed Aug. 5, 1970, Ser. No. 62,235
Int. Cl. G05b 19/24
U.S. Cl. 318—571 2 Claims

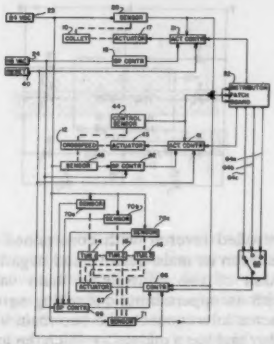


A feedrate control system having an IPR capability including a spindle pulse transducer and three interpolators for override, feedrate, and axis command functions.

3,676,761
AUTOMATIC TOOL SYSTEM AND METHOD FOR CONTROL

William S. Fortune, 14250 Dearborn Street, Panorama City, Calif.

Filed Feb. 19, 1970, Ser. No. 12,727
Int. Cl. G05b 19/22
U.S. Cl. 318—574 18 Claims

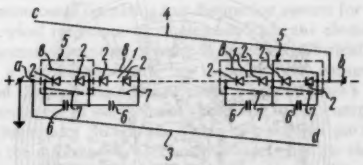


A circuit particularly useful for automating a standard machine-shop turret lathe. The circuit includes the capability of programming a sequence of events to be performed by the lathe. Mechanical actuators such as electrical motors and pneumatic pistons provide the capability of imparting movement to those lathe mechanisms usually operated manually. The operations of these lathe mechanisms are monitored by sensors such as photocells and microswitches. Pulses produced by the sensors are routed through the circuitry in a prescribed manner to produce the desired sequence of events.

3,676,762
HIGH-VOLTAGE SEMICONDUCTOR RECTIFIER UNIT

Anton Lavrentievich Saralidze, ulitsa Sovetskaya, 87, and Antoly Lazarevich Efremidi, ulitsa Antoneli, 18, both of Tbilisi, U.S.S.R.

Filed Oct. 26, 1970, Ser. No. 83,683
Int. Cl. H02m 7/00
U.S. Cl. 321—8 R 4 Claims

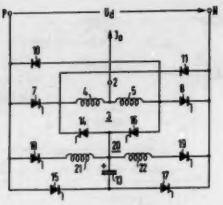


A high-voltage semiconductor rectifier unit is provided which comprises a chain of series-connected diodes and bypass capacitors disposed between common symmetrical metal screens so that each end of said chain is connected to a respective one of said common metal screens while the spacing between the end of the chain connected to one of common metal screens and the same screen increases at greater distances from said end of the chain. The diode chain can be divided into groups each group being disposed between symmetrical group metal screens.

3,676,763
SELF-COMMUTATING DIRECT-TO-ALTERNATING CURRENT INVERTER

Hermann Tappeiner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 17, 1971, Ser. No. 116,198
Claims priority, application Germany, Feb. 19, 1970, P 20 07 567.6
Int. Cl. H02m 7/52
U.S. Cl. 321—45 C 5 Claims

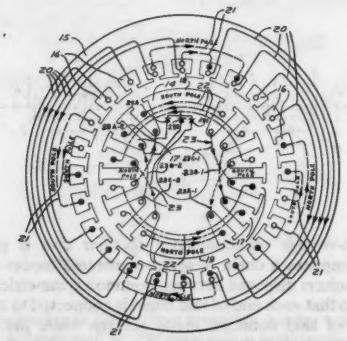


A self-controlled inverter with constrained commutation comprises between its main positive and negative buses a series connection of two controlable main valves, such as thyristors, with an appertaining quenching network. A commutating reactor interconnects the two main valves in series with each other and has a midtap to which the load to be energized is attached. The quenching network has a quenching capacitor common to the two main valves and is connected, independently of the main valves, between a direct-voltage supply whose terminal polarity is selectable with respect to the electrodes of the quenching capacitor. The direct-voltage supply may either be constituted by the main buses of the inverter itself, or they may consist of a separate voltage source. In either case an after-charging network is preferably provided for replenishing the charge of the commutating reactor, the after-charging network having an inductance means connected between the quenching capacitor and the buses or other voltage supply.

3,676,764
BRUSHLESS ALTERNATING CURRENT GENERATOR

Charles D. Syverson, North Mankato, Minn., assignor to Kohler Co., Kohler, Wis.

Continuation-in-part of Ser. No. 860,264, Sept. 23, 1969, abandoned. This application Jan. 29, 1971, Ser. No. 111,124
Int. Cl. H02k 19/28
U.S. Cl. 322—51 6 Claims

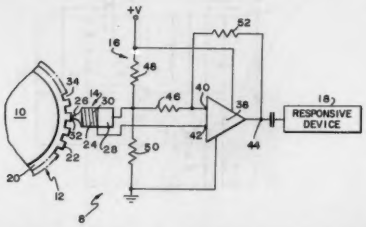


A self-excited brushless alternating current generator utilizes a four-pole direct current excitation winding wound on a stator and operable to generate an exciter flux which induces an alternating current in a field excitation winding wound on a rotor. The field excitation winding connects through rectifiers to a d-c main field winding also wound on the rotor. The main field winding generates a main field flux which induces an alternating current in a two-pole a-c output winding wound on the stator. No brushes are required and the excitor windings are wound on the same magnetic core with the generator windings.

3,676,765
TACHOMETER GENERATOR

Vernon C. Westcott, Lincoln, Mass., assignor to Trans-Sonics, Inc., Lexington, Mass.

Continuation of Ser. No. 835,133, June 20, 1969, abandoned. This application June 30, 1970, Ser. No. 56,100
Int. Cl. H02k 11/00
U.S. Cl. 322—58 6 Claims

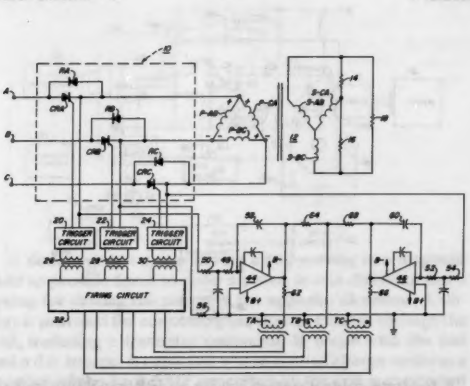


A tachometer generator for use in a high noise environment comprises a multi-pole rotor of magnetic material and a single-pole stator. The stator includes a magnet arranged to pass flux through the stator and into the rotor, and a coil that develops a voltage in response to changes in the stator flux. Movement of the rotor poles past the stator provides changes in reluctance that are reflected in changes in the stator flux. The coil thereby develops a signal whose frequency is proportional to the rotational speed of the rotor. This signal is applied to a signal-conditioning amplifier housed with the stator. The amplifier has a high gain and hysteresis, which combine to provide a square wave output having a large amplitude and substantially immune to noise picked up by the generator.

3,676,766
MULTIPHASE ALTERNATING CURRENT REGULATION SYSTEM FOR TRANSFORMER-COUPLED LOADS

Ronald C. Blackmond, Allison Park, Pa., assignor to Robicon Corporation, Pittsburgh, Pa.

Filed Dec. 11, 1970, Ser. No. 97,260
Int. Cl. G05f 1/38, 1/56
U.S. Cl. 323—6 7 Claims



In a multiphase alternating current regulating system employing controlled rectifiers operated in accordance with

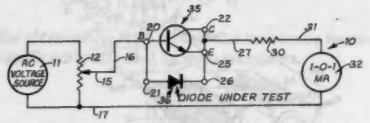
phase commutation techniques, the improvement of circuitry for eliminating direct current components across loads supplied by the three-phase system which would otherwise occur when the loads become unbalanced.

3,676,767

DEVICE FOR AUTOMATICALLY IDENTIFYING UNKNOWN TRANSISTORS

Donald A. Boelter, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed July 25, 1969, Ser. No. 844,814
Int. Cl. G01r 31/22
U.S. Cl. 324—158 D 4 Claims



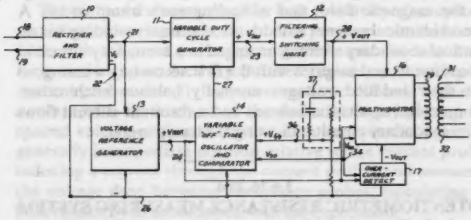
Process and apparatus for checking transistors and diodes to determine whether a transistor is NPN or PNP, to determine whether the transistor is germanium or silicon and also to determine the polarity of a diode. The checking device may include a pair of spaced terminals, a known alternating voltage source and a known resistance, with the terminals, source and resistance in a chain whereby connecting of the base of the transistor to one terminal and the collector and emitter to the other terminal places the source, terminals, transistor and resistance in a series circuit. A meter may then be used to measure the direction and amplitude of current through the circuit or, alternatively, the direction and amplitude of current can be used to actuate indicating devices, and, if desired, further electrical circuitry for performing additional tests on the transistors.

3,676,768

SOURCE INDEPENDENT POWER SUPPLY

Walter T. Morrey, Cambridge, Mass., assignor to The Bendix Corporation

Filed Jan. 27, 1971, Ser. No. 110,200
Int. Cl. G05f 1/58
U.S. Cl. 323—22 T 9 Claims



A power supply which yields one or more constant output voltages independently of the input voltage level and irrespective of whether the energizing source is AC or DC, and irrespective of the frequency of the source. The input voltage energizes a variable duty cycle generator, the duty cycle of which is controlled by a variable off-time oscillator. The off time of the oscillator is established by a reference voltage and the system output voltage so that the output voltage is regulated irrespective of the input voltage.

ERRATUM

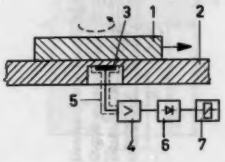
For Class 324—158 D see:
Patent No. 3,676,767

3,676,769

METHOD AND APPARATUS FOR DETECTING A RELATIVE MOVEMENT BETWEEN TWO BODIES BEING IN FRICTIONAL CONTACT WITH EACH OTHER

Erich Loepfe, Zollikerberg, Switzerland, assignor to Aktiengesellschaft Loepfe, Zurich, Switzerland

Filed June 13, 1969, Ser. No. 833,030
Claims priority, application Switzerland, June 17, 1968, 9225/68; Oct. 24, 1968, 16038/68; April 30, 1969, 6679/69
Int. Cl. G01r 29/12
U.S. Cl. 324—32 13 Claims



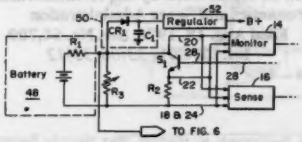
An apparatus is provided for determining a relative movement between two bodies wherein the movement causes a sliding friction between the bodies. The friction causes changes in electrical charges in the friction zone. An electrical conductor is located within the operative range of these changes. The conductor is connected with a device amplifying and further processing the potential fluctuations of the conductor occurring during the relative movement which is to be determined.

3,676,770

PULSE SAMPLING BATTERY FUEL GAUGING AND RESISTANCE METERING METHOD AND MEANS

Harold M. Sharaf, Milton, and Richard L. Eby, South Weymouth, both of Mass., assignors to Anderson Power Products, Inc., Boston, Mass.

Filed May 15, 1970, Ser. No. 37,630
Int. Cl. G01n 27/46
U.S. Cl. 324—29.5 12 Claims



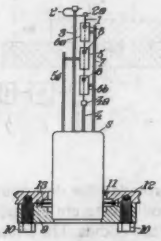
A continuously operating low dissipation system for sensing the electrical resistance of an element while the element carries a normal operating current. A pulse of electrical energy having a regulated ohm's law related first parameter is switched through the element while a second ohm's law related parameter of the element's response to the energy pulse is simultaneously measured. These two known parameters provide the information necessary to determine the element's resistance using Ohm's law. In the preferred embodiment voltage and current are used as the two parameters. The system is calibrated for the regulated level of the first parameter while the second parameter is ampified and stored in a sampling circuit for continuous display between pulses as an indication of resistance. The pulse techniques of this disclosure allow continuous operation of the system without heating of the resistive element or excessive power use. The resistance indication is additionally useful for indicating the remaining charge in a battery where the indicated resistance is the battery's internal resistance. A distinct battery terminal voltage indication is also given.

3,676,771

METHOD FOR MEASUREMENT OF PARTIAL PRESSURES OF A GASEOUS SUBSTANCE USING A METALLIC COMPOUND OF THE GASEOUS SUBSTANCE

Jean-Pierre Olivier Loup, Olivet; Jacques Emile Gutknecht, L'Hay Les Roses, and Anne-Marie Anthony, nee Barbier, Meudon, all of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Puteaux, France

Filed Dec. 30, 1969, Ser. No. 889,263
Claims priority, application France, Dec. 31, 1968, 182836
Int. Cl. G01n 27/62
U.S. Cl. 324—33 3 Claims



Partial pressures (P) less than 10^{-8} atmospheres of O_2 or S are measured by placing a metallic oxide or sulfide compound in the atmosphere to be measured, bringing the compound to a temperature (T) and measuring its thermoelectronic emission (J) or its work function ($E\phi$). The equations then applied are

$$\log J = K_1 - z \log P$$

$$E\phi = K_2 + zkT \log P$$

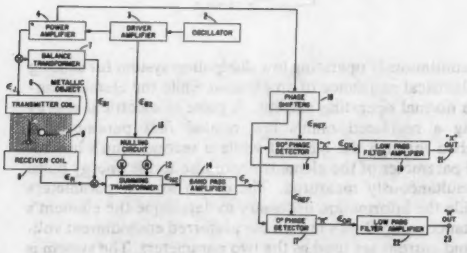
where k, K_1, and K_2 are constants and z is a characteristic value of the defects of the structure of the compound.

3,676,772

METALLIC INTRUSION DETECTOR SYSTEM

Robert D. Lee, San Mateo, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 18, 1970, Ser. No. 64,709
Int. Cl. G01r 33/00, 33/12
U.S. Cl. 324—41 2 Claims



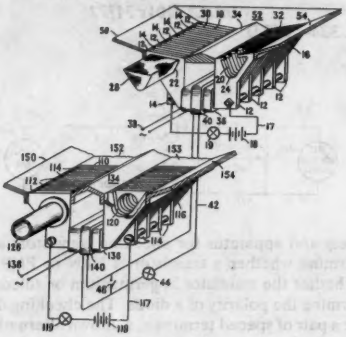
A metal detection system comprising an electro-magnetic transmitter with a single transmitting coil and a receiver with a single receiving coil. The receiving coil is coupled to the radiated electromagnetic energy and the receiver generates a signal that may be used to indicate the intrusion into the electromagnetic field of a metallic object, to indicate whether such object is ferrous or non-ferrous, and to indicate the relative size of the metallic object.

3,676,773

APPARATUS FOR DETECTING ELECTRICALLY CONDUCTIVE PARTICLES USING A GAS PERMEABLE, BUT LIQUID IMPERMEABLE SURFACE

Hans A. Eckhardt, 55 Crescent Bend, Allendale, N.J.

Filed Feb. 3, 1969, Ser. No. 795,888
Int. Cl. G01r 33/00
U.S. Cl. 324—41 23 Claims



An apparatus for detecting tramp metal contained in electrically non-conductive fluid material has a surface supporting the fluid material, formed by the ends of the laminae of a laminated magnet alternately connected to the terminals of a battery in a circuit with a current indicator. Tramp metal forming a bridge between the pole ends of two alternate laminae close the circuit and are thus monitored by the current indicator. An opening extends through the laminated magnet traversing the laminae, and the insulation is removed between the opening and the pole ends of the laminae. The opening has a gas-permeable non-conductive liner, so that air introduced into the opening flows through the liner and between the laminae to the surface and into the fluid material. Tramp metal is thus caused to settle downward in the fluidized material.

The magnet has a primary winding which induces into a secondary winding a voltage changed by tramp metal changing the magnetic field, and indicating such tramp metal. A second identical magnet with identical primary winding has an identical secondary winding arranged in a secondary circuit in opposition to and in series with the first secondary winding, so that their induced voltages normally balance each other. Tramp metal upsets the balance and a resultant current flows in the secondary circuit indicating the tramp metal.

3,676,774

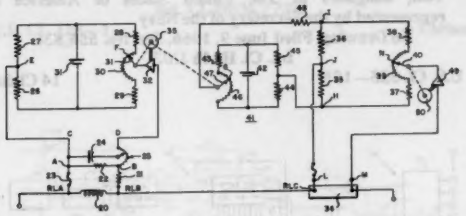
POTENTIOMETRIC RESISTANCE MEASURING SYSTEM

Joseph F. Stokes, Middlebury, and George E. Van Vessem, Naugatuck, both of Conn., assignors to American Chain & Cable Company, Inc., New York, N.Y.

Filed May 5, 1970, Ser. No. 34,850
Int. Cl. G01r 31/00, 27/00
U.S. Cl. 324—57 6 Claims

A system for measuring the resistance of a current-carrying inductive element comprises a pair of coupled, self-balancing potentiometers and an adjustable voltage delay circuit. One of the potentiometers is adapted for measuring the element voltage (after it is subjected to a predetermined time delay) by comparing it with a constant reference voltage. The other potentiometer is adapted for measuring the element resistance by comparing this measured element voltage with a voltage corresponding to the current through the element. The time

delay introduced in the voltage measurement is chosen to delay voltage transients by a time equal to the inductive time



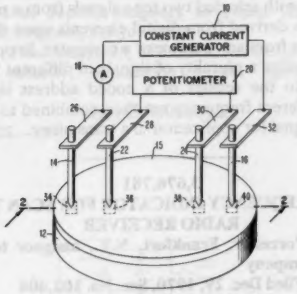
lag of the element current, so that the resistance measurement is not significantly affected by such transients.

3,676,775

METHOD FOR MEASURING RESISTIVITY

Andrew Dupnock, Fishkill; Edward F. Gorey, Beacon, and William A. Keenan, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1971, Ser. No. 141,307
Int. Cl. G01r *27/14*
U.S. Cl. 324—64 **6 Claims**



The method for measuring the bulk resistivity of an epitaxial semiconductor layer on a monocrystalline semiconductor base with a 4-point probe apparatus wherein the base has at least two high conductivity diffused regions, positioning two current probes directly over two separate diffused regions in contact with the surface of the epitaxial layer, placing two spaced voltage probes in contact with the epitaxial layer in a generally intermediate position relative to the current probes, inducing a current through the current probes and measuring the voltage drop between the voltage probes, calculating the bulk resistivity in accordance with the expression:

$$\rho = \frac{\text{voltage} \times \text{correction factor} \times \text{thickness of the layer}}{\text{CURRENT}}.$$

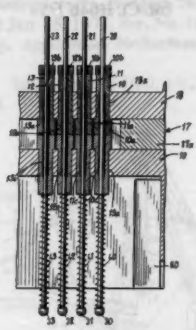
3,676,776

TESTING PROBE CONSTRUCTION

Franz Bauer, Pullach; Karl Friedrich Besemer, Planegg, and Gotthard Kinner, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 19, 1970, Ser. No. 3,726
Int. Cl. G01r *31/02*
U.S. Cl. 324—72.5 **10 Claims**

Precise testing of printed circuit boards having closely spaced contact bores is made possible by an apparatus comprising a plurality of predisposed, closely spaced contact needle probes each of which has a flexible, slender construction to automatically compensate for spacing variations of the contacts within manufacturing tolerances and each of which may



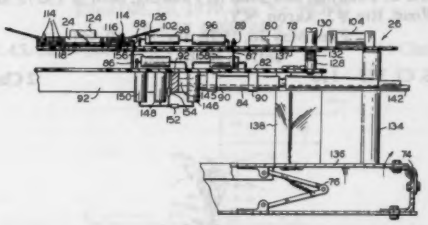
have a detachable contact head to compensate for variations in contact bore diameters. A generally spherical contact probe head surface assures a uniform contact with the edge of the bore and hence equal contact resistances, regardless of the angle of the probe with the bore.

3,676,777

APPARATUS FOR AUTOMATICALLY TESTING INTEGRATED CIRCUIT DEVICES

Thomas H. Charters, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 10, 1970, Ser. No. 62,292
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **22 Claims**



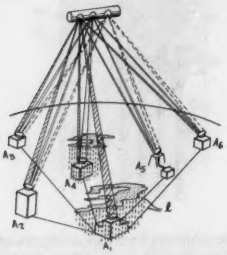
An integrated circuit test system is described including a programmable test fixture controlled by a computer for automatically performing D.C., dynamic, and functional tests on integrated circuit devices to provide 100 measurements per second with a rise time of 1 nanosecond. The test fixture includes a first circuit board on which a plurality of test probes are mounted, a second circuit board connected to such first board by connector pins and having a plurality of different loads, D.C. bias voltage sources, and associated switches mounted thereon for selectively connecting them to active connector terminals connected to the pins of the device under test, and a third circuit board having a socket for such device releasably connected to the load board. A fourth circuit board with loads mounted thereon may be attached to the socket board for testing extremely high speed devices and extends perpendicular through central openings in the other boards. The sampling probes are plugged into sockets on a grounded mounting ring attached to the probe board and extend radially outward from such ring in parallel to such probe board to reduce inductance and require less space. The load board is provided with a plurality of ground terminals positioned between adjacent active connector terminals for further reducing the inductance to ground.

3,676,778

SATELLITE COMMUNICATION SYSTEM

Yoshibumi Mori, Tokyo, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 738,069, June 18, 1968, abandoned. This application Aug. 20, 1970, Ser. No. 65,653
Int. Cl. H04b 1/54
U.S. Cl. 325—4 4 Claims



Attenuation caused by precipitation in a radio satellite communication system is minimized by monitoring transmission between the stations and the rate of precipitation at each station so that frequency bands having low attenuation to precipitation may be assigned to the stations in accordance with their rate of precipitation. A local monitor and controller provides switching information in response to the rate of precipitation to switch the transmission and reception respectively to transmitting and receiving frequency converters which operate in selected frequency bands.

3,676,779

SIGNAL DEVICE

Merle E. Faulring, and John A. Faulring, both of 13275 Stage Road, Rte. #2, Akron, N.Y.

Filed May 26, 1970, Ser. No. 40,561
Int. Cl. H04b 1/02
U.S. Cl. 325—115 2 Claims

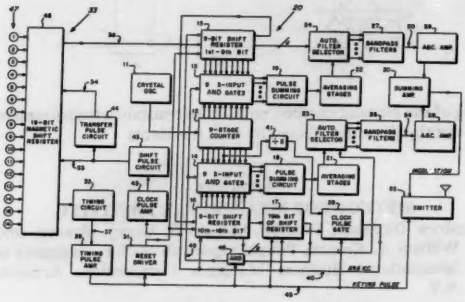
A balloon package is folded onto an ejection platform which becomes propelled outwardly from an enclosure. A gas cartridge inflates the balloon as the latter is ejected from the enclosure causing the balloon's inflation. A radio transmitter attached to the balloon is actuated when the balloon is ejected so that a coded radio signal can issue forth from the location of the balloon. Manual and automatic trigger means are provided for ejecting the balloon.

3,676,780

DIGITAL FREQUENCY GENERATOR FOR CODED INTERROGATION

George W. Niemann, and Charles N. Shannon, both of Dallas, Tex., assignors to The United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 9, 1966, Ser. No. 556,836
Int. Cl. H04b 1/02
U.S. Cl. 325—155 14 Claims



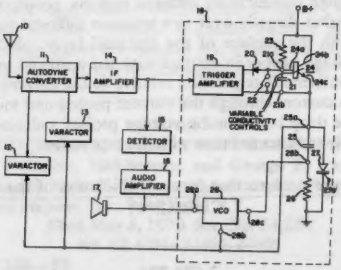
A command control sonobuoy system is provided in which a large number of buoys are commanded on a single frequency from a remote position. A single radio frequency carrier signal is modulated with selected two tone signals from a plurality of discrete tones derived from digital elements upon the receipt of instructions from an operator or a computer. In operation, a generate provides a plurality of signals of different frequency in response to the receipt of a coded address signal. The signals of different frequency are then combined to provide a modulated signal for application to a transmitter.

3,676,781

AUDIO FREQUENCY INDICATOR FOR SCAN TUNED RADIO RECEIVER

Joseph A. Worcester, Frankfort, N.Y., assignor to General Electric Company

Filed Dec. 29, 1970, Ser. No. 102,404
Int. Cl. H04b 1/36
U.S. Cl. 325—455 5 Claims



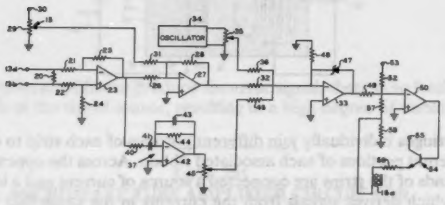
An audible frequency indicator for use in a radio receiver employing automatic frequency scan tuning. A variable scan control signal, corresponding to the frequency location of the scan within a given frequency band is applied to a voltage controlled oscillator. The voltage controlled oscillator produces an output in the audible range, whose pitch is a function of the frequency location of the scan, and that is terminated when a station is tuned in.

3,676,782

MODIFIED ON-OFF CONTROL

Donald W. Lane, and Troy J. Pemberton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed June 22, 1970, Ser. No. 48,343
Int. Cl. H03k 17/00
U.S. Cl. 328—1 6 Claims



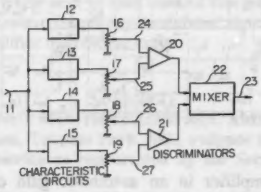
A modified on-off controller is formed by adding an alternating signal to the error signal. The frequency of the added signal is sufficiently high to prevent the control element from responding at this frequency. A derivative signal can also be added.

3,676,783

WAVEFORM DISCRIMINATING CIRCUIT

Setsuro Kinbara, and Tadashi Kumahara, both of Naka-gun, Ibaragi-ken, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed March 25, 1969, Ser. No. 810,223
Claims priority, application Japan, April 23, 1968, 43/27280
Int. Cl. H05k 5/20
U.S. Cl. 328—117 4 Claims



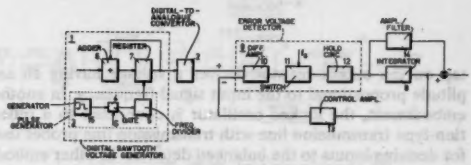
A pulse shape discriminating circuit comprising an input terminal for receiving an input signal, a plurality of characteristic circuits having their inputs connected in common to said input terminal, first and second amplitude discriminating circuits each receiving shaped pulses from the characteristic circuits associated therewith, and a mixing circuit for combining the pulses from said first and second amplitude discriminating circuits. The first amplitude discriminating circuit generates a first step pulse representative of the time which corresponds to a first point on said input signal, said first point having a value equal to a first preselected percentage of the peak value of said input signal, the second amplitude discriminating circuit generates a second step pulse representative of the time which corresponds to a second point on said input signal, said second point having a value equal to a second preselected percentage of the peak value of said input signal, and the mixing circuit generates a rectangular pulse waveform having width equal to the time interval between said first and second points.

3,676,784

APPARATUS FOR GENERATING AN ANALOGUE SAWTOOTH VOLTAGE, THE SLOPE OF WHICH CORRESPONDS WITH THE MEAN SLOPE OF A STEPPED SAWTOOTH VOLTAGE

Corstiaan Le Comte, Huizen, Netherlands, assignor to N. V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Jan. 25, 1971, Ser. No. 109,213
Claims priority, application Netherlands, Jan. 29, 1970, 7001235
Int. Cl. H03k 4/10, 4/02
U.S. Cl. 328—181 1 Claim



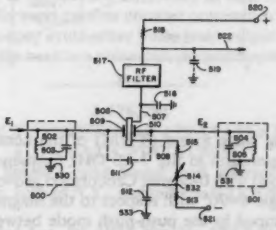
A sawtooth generator provided with a device for generating a digital sawtooth function, said device being connected to a digital-to-analogue converter, also containing an integrator and an error voltage detector to convert differences occuring at discrete moments between the output voltage of the digital-to-analogue converter and the output voltage of the integrator to a control voltage varying in steps, which, fed to the integrator causes the output voltage of the integrator to form an approach of the function to be generated shaped as an angled line.

3,676,785

HIGH GAIN, ULTRA LINEAR DETECTOR FOR FREQUENCY MODULATION

Henri T. Pichal, St. Petersburg, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 10, 1970, Ser. No. 96,802
Int. Cl. H03d 3/14
U.S. Cl. 329—103 11 Claims



A detector for providing quadrature detection of frequency modulated signals is disclosed. An FET (Field Effect Transistor) device having two gates, a source and a drain, has one gate coupled to the frequency modulated incoming signal and the other gate coupled through a 90° phase shifter to the incoming signal. The demodulated signal appears at the drain electrode of the FET.

3,676,786

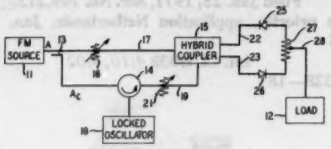
LOCKED OSCILLATOR CIRCUITS

Herbert Neil Carlson, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 30, 1970, Ser. No. 93,771
Int. Cl. H03d 3/24
U.S. Cl. 329—122 4 Claims

One embodiment of a microwave FM demodulator comprises first and second branches to which the input FM signal

is applied. The signal on the first branch controls the output phase of an injection-locked oscillator. The output of the oscillator and the signal on the second branch are combined by a hybrid coupler and applied to a balanced phase-sensitive detector comprising first and second oppositely-poled diodes connected to opposite sides of an output resistance. A center



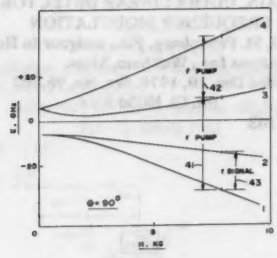
tap on the output resistor derives a voltage having an amplitude proportional to the input signal frequency. In another embodiment, the locked oscillator is connected to a reflection-type transmission line with transmission line probes used for deriving inputs to the balanced detector. In other embodiments, the output voltage is used to make the locked oscillator center frequency track the input locking frequency.

3,676,787

MASER FOR FREQUENCIES IN THE 7–20 GHZ RANGE

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert C. Clauss, and Rex B. Quinn, both of La Crescenta, Calif.

Filed Aug. 11, 1970, Ser. No. 63,144
Int. Cl. H01s 1/00
U.S. Cl. 330—4 **9 Claims**



A traveling wave maser (TWM) of the comb type is disclosed for operation in the 7–20 GHz frequency range. The TWM is loaded with 0-degree Czochralski grown ruby with its C-axis at angle θ=90° with respect to the magnetic field. The TWM is pumped in the push-push mode between levels 1–3 and 3–4 with two different frequencies.

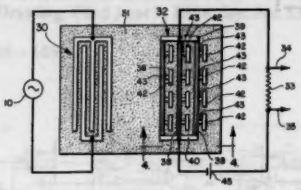
3,676,788

ACOUSTIC SURFACE WAVE TRANSMISSION DEVICE WITH AMPLIFICATION

Mino Green, London, England, assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 21, 1971, Ser. No. 155,006
Int. Cl. H03f 3/04
U.S. Cl. 330—5.5 **5 Claims**

A signal transmission device includes a piezoelectric substrate upon which surface waves are launched by an input transducer which may, for example, be composed of a pair of interleaved combs of conductive electrodes. An output transducer responds to the surface waves to develop an output signal. The output transducer includes a plurality of strips of semi-conductive material individually disposed across the path of the surface waves, with successive strips spaced apart by one acoustic wavelength. Spaced from each strip by an effective ½ wavelength distance are at least one and preferably a plurality of spaced conductive ribbons disposed end-to-end across the path of the surface waves. A plurality of conductive



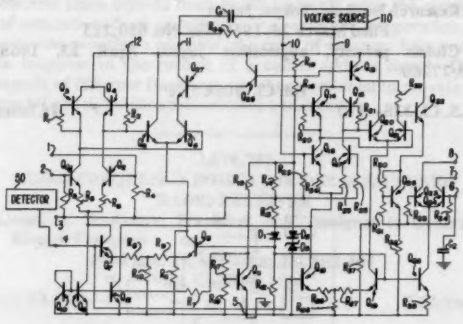
bridges individually join different portions of each strip to different portions of each associated ribbon. Across the opposing ends of the strips are connected a source of current and a load which derives signals from the currents in the strips that are modulated by the surface waves.

3,676,789

LOW DISTORTION AGC AMPLIFIER

Derek Bray, Fuchstanzstrasse 12, Stierstadt/Taunus, Germany

Continuation-in-part of Ser. No. 827,749, May 26, 1969, abandoned. This application Nov. 16, 1970, Ser. No. 89,994
Int. Cl. H03g 3/30
U.S. Cl. 330—29 **10 Claims**



A linear amplifier in an automatic gain control circuit whose gain is a function of the ratio of two bias currents is obtained by selectively coupling two pairs of semiconductor devices such that the effects of nonlinearities due to the logarithmic relationship between voltage and current across a PN junction cancel. The relationship between the two pairs of devices is such that the output signal from the second pair of devices is linearly related to the input signal driving the first pair of devices.

3,676,790

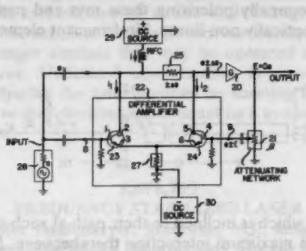
DIFFERENTIAL FEEDBACK AMPLIFIER

Henry Richard Beurrier, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 3, 1971, Ser. No. 149,666
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D **4 Claims**

The signal at the output of a signal amplifier is compared, in a differential amplifier, with the input signal to the signal amplifier. Any difference between these two voltages causes an error-correcting voltage to be generated across an impedance in series between the signal source and the signal amplifier

input port. This error-correcting voltage is added to the input signal in phase to cancel the output signal error. By using a differential amplifier to produce the error signal, there is no feedback to the signal source, resulting in a high degree of stability.



3,676,791

MICROWAVE TUBE AMPLIFIER CIRCUIT FOR APLITUDE MODULATED AND FREQUENCY MODULATED MICROWAVE SIGNAL

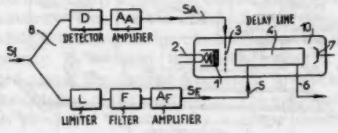
Pierre Guenard, Paris, France, assignor to Thomson-CSF

Filed March 12, 1971, Ser. No. 123,582

Claims priority, application France, March 17, 1970, 7009520

Int. Cl. H03f 3/58

U.S. Cl. 330—43 2 Claims



Circuit improving the efficiency of microwave tubes for amplification of an amplitude and frequency modulated signal, comprising a conventional amplifier tube with an electron current control electrode, and a device for splitting the signal into two separate signals, one of them being the amplitude modulation envelope to be sent to said control electrode, the other being the microwave frequency-modulated signal alone, to be sent to the amplifier microwave input.

3,676,792

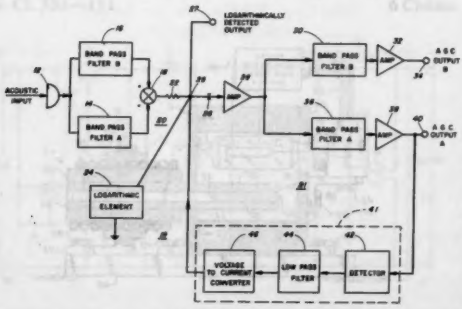
FREQUENCY MULTIPLEXING AGC AMPLIFIER

Victor S. Newton, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 9, 1970, Ser. No. 44,828

Int. Cl. H03g 5/16

U.S. Cl. 330—52 2 Claims



A circuit for AGC amplification of signals in different acoustic frequency bands so that the signals in all frequency bands are normalized to the signal in one particular band by using a single logarithmic detector responsive to signals in the band to which the other bands are normalized.

3,676,793

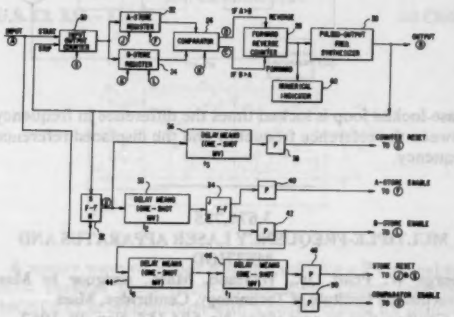
DIGITAL FREQUENCY LOCK GENERATOR

Bruce J. Brown, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 19, 1971, Ser. No. 134,942

Int. Cl. H03b 3/04

U.S. Cl. 331—1 A 9 Claims



A digital frequency lock generator having an input-output pulse-train counter, A-store register, B-store register, comparator, forwardareverse counter, free-running, pulsed-output frequency syntheaizer and control logic circuit for timing the components requiring setting and resetting pulses. The time interval between the first input pulse and the next succeeding output pulse is measured and stored in the A-store register. The time interval between the second input pulse and the succeeding output pulse is measured and stored in the B-store register. The comparator compares the two time intervals and sends a pulse to that terminal of the forward-reverse counter which will act to correct the difference in time intervals. The output of the forward-reverse counter commands the frequency of the frequency synthesizer pulse train output. The circuit is then set for the next two pulse-pair measurements.

3,676,794

FREQUENCY SYNTHESIZER APPARATUS HAVING AUTOMATIC FINE TUNING

Frederick W. Bidell, Grand Island, and Richard J. Hughes, Williamsville, both of N.Y., assignors to GTE Sylvania Incorporated

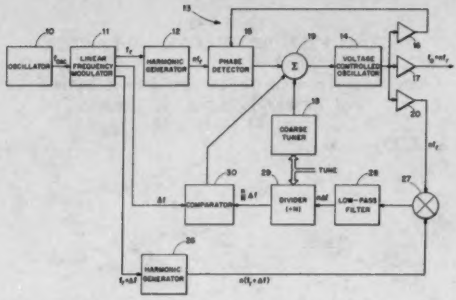
Filed Aug. 30, 1971, Ser. No. 175,840

Int. Cl. H03b 3/04

U.S. Cl. 331—11 12 Claims

Harmonic generator type of frequency synthesizer employing a reference frequency signal equal to the spacing between adjacent channels, a displaced reference frequency signal which differs from the reference frequency by a few hertz, and a differential frequency signal equal to the difference between the reference frequency and the displaced reference frequency. The reference frequency signal is applied to a first harmonic generator which generates a spectrum of harmonics of the reference frequency. The spectrum is applied to a phase-locked loop which produces an output frequency signal equal to a particular one of the harmonics of the reference frequency. The displaced reference frequency signal is applied to a second harmonic generator which generates a spectrum of harmonics of the displaced reference frequency. This spectrum is combined with the output signal of the phase-locked loop in a mixer and the output of the mixer is applied to a low-

pass filter. The frequency of the only output signal from the filter is equal to the same particular harmonic to which the



phase-locked loop is locked times the difference in frequency between the reference frequency and the displaced reference frequency.

3,676,795

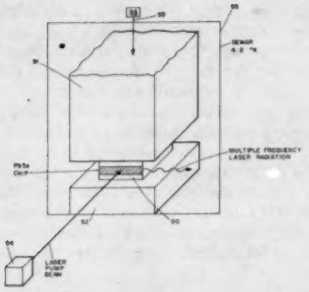
MULTIPLE-FREQUENCY LASER APPARATUS AND METHOD

George W. Pratt, Jr., Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 684,155, Nov. 20, 1967, abandoned. This application July 13, 1970, Ser. No. 54,459

Int. Cl. H01s 3/18

U.S. Cl. 331—94.5 28 Claims



Apparatus for providing a multiple-frequency laser beam wherein a multi-valley semiconductor device, having an optical resonant cavity or forming at least a part of an optical resonant cavity is pumped and a shear stress or uniaxial stress exerted upon the device to produce different-valued energy gaps within the semiconductor material.

The invention herein described was made in the course of contracts with the Office of the Secretary of Defense, Advanced Research Projects Agency.

3,676,796

PROCESS AND DEVICE FOR THE GENERATION OF A SINGLE-FREQUENCY LIGHT RAY

Heinz Weber, Munchenbuchsee, Switzerland, assignor to Institut fur angewandte Physik der Universitat Bern, Bern, Switzerland

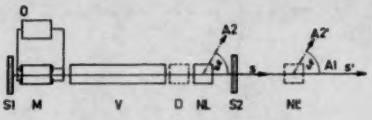
Continuation of Ser. No. 718,810, April 4, 1968, abandoned. This application Nov. 18, 1970, Ser. No. 90,840

Claims priority, application Switzerland, April 13, 1967, 5218/67

Int. Cl. H01s 3/10

U.S. Cl. 331—94.5 5 Claims

A method of generating a single frequency laser light ray comprising: frequency modulating two oscillating modes or self-oscillations of a laser oscillator at a modulation frequency which approximates the frequency distance of adjacent modes; orthogonally polarizing these rays and passing them through an optically non-linear, birefringeant element the optical axis of which is inclined to their path at such an angle as to produce a maximum interaction therebetween. Due to the maximum non-linear interaction an unmodulated, single frequency output ray is obtained the frequency of which equals the sum of the carrier frequencies of respective rays.



3,676,797

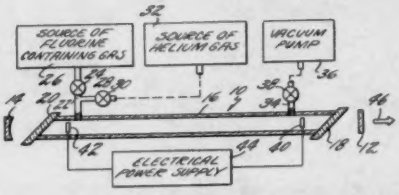
ATOMIC FLUORINE LASER

Mark A. Kovacs, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 21, 1970, Ser. No. 100,201

Int. Cl. H01s 3/22

U.S. Cl. 331—94.5 4 Claims



Compound gases having fluorine as a constituent are combined with helium in an enclosure within an optical cavity and are subjected to the discharge of electrical energy. The electric discharge dissociates the compound gas providing fluorine atoms and excites the fluorine providing a population inversion of electronic energy levels. The fluorine lases in the optical cavity producing a visible beam of laser energy at 7039, 7129 and 7204 Angstroms.

3,676,798

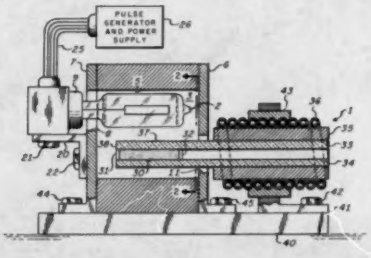
COOLING SYSTEM FOR LASING MEDIA

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation

Filed Oct. 13, 1969, Ser. No. 865,910

Int. Cl. H01s 3/04; F28f 7/00

U.S. Cl. 331—94.5 2 Claims



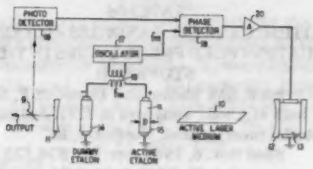
Heat generated within a lasing medium operating in a laser pumping cavity is efficiently removed from the pumping cavi-

ty by use of a heat sink located exterior of the cavity. A tube formed of a single crystal of sapphire surrounds the laser medium and extends through an end wall of the pumping cavity. There, the sapphire tube is in turn surrounded by a metal heat exchanger element that may be operated at cryogenic temperatures. Undesired condensation is prevented from forming adjacent the laser medium by forming the pumping cavity as a sealed chamber and evacuating it to a relatively low gas pressure.

3,676,799
FREQUENCY STABILIZED LASER

Hans Guenter Danielmeyer, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,798
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **4 Claims**



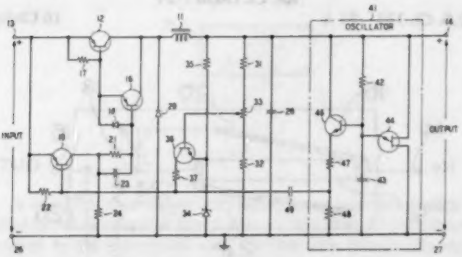
Single frequency laser oscillation is realized by including within the laser cavity a resonant etalon, tuned to the desired laser frequency. This has the effect of suppressing all other modes while permitting the laser to oscillate at the desired single frequency. In addition, the etalon tuning is frequency modulated about the desired frequency, producing an amplitude modulation of the laser signal. The amplitude modulation thus produced is sensed by a phase detector which generates an error signal whenever the laser frequency tends to deviate from the mean, etalon frequency. The error signal is used, in turn, to retune the laser cavity.

It is an advantage of the present arrangement that spurious frequency modulation of the laser frequency, introduced by the stabilization system, is substantially less than that produced by comparable prior art stabilization circuits. Furthermore, such modulation can be conveniently reduced, or eliminated, by the addition of a dummy etalon driven in antiphase to the active etalon.

3,676,800
SYNCHRONIZED SELF-OSCILLATING SWITCHING REGULATOR

Herbert Rudolf Weischedel, Rockaway, and George Raymond Westerman, Denville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1970, Ser. No. 101,344
Int. Cl. H03b *3/02*
U.S. Cl. 331—111 **6 Claims**

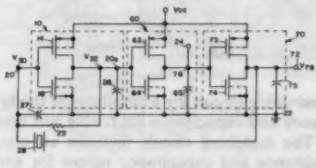


A periodic synchronizing signal of constant frequency is coupled to the feedback loop of a self-oscillating switching regulator to hold the switching frequency constant. The synchronizing signal is added directly to the feedback signal to drive the switch ON and OFF. The waveform of the synchronizing signal is not critical; a relaxation oscillator and a resonant circuit shock excited by the switching are shown as synchronizing signal sources.

3,676,801
STABILIZED COMPLEMENTARY MICRO-POWER SQUARE WAVE OSCILLATOR

Fund H. Musa, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Oct. 28, 1970, Ser. No. 84,602
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 R **10 Claims**

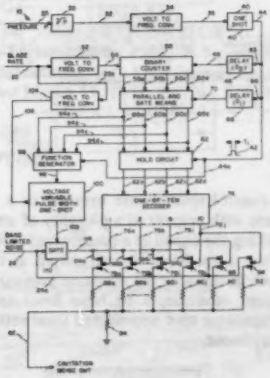


A square wave oscillator is shown utilizing a P channel and an N channel Metal-Oxide-Silicon Field Effect Transistor (MOSFET) in combination with a quartz crystal for generating a frequency stabilized square wave signal suitable for use in a wristwatch.

3,676,802
SUBMARINE PROPELLER CAVITATION NOISE SIMULATOR

Francis J. Murphree, Winter Park, and Paul S. Catano, Orlando, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 21, 1971, Ser. No. 155,053
Int. Cl. G08b *3/10*
U.S. Cl. 332—9 R **4 Claims**

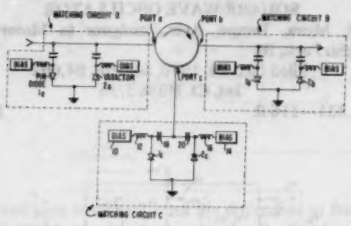


Simulation of submarine propeller cavitation as it varies with speed and depth of submergence is effected by feeding a frequency proportional to blade rate to a counter which is periodically read out and reset at a rate proportional to the square root of pressure. The read out is used to control noise attenuator means including a one of N decoder and N attenuators scaled to provide relative noise according to a curve characteristic of the submarine to be simulated. The noise output is modulated in pulse width and repetition rate by a function generator also controlled by the counter read-out.

3,676,803
ELECTRONICALLY TUNABLE MATCHING CIRCUIT FOR CIRCULATORS

William J. Simmons, Torrance, Calif., assignor to Communications Satellite Corporation

Filed May 1, 1970, Ser. No. 33,762
Int. Cl. H01p 1/32
U.S. Cl. 333—1.1 1 Claim

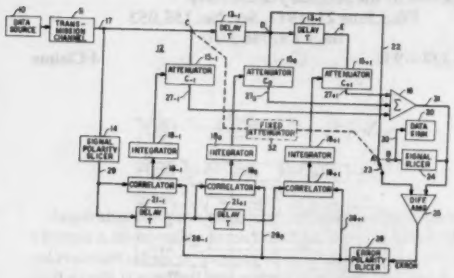


A novel matching circuit for a circulator of the type requiring a resistance and capacitance for tuning and matching the circulator. The matching circuit includes an electronically variable resistance and capacitance means for enabling optimum performance of the circulator over the range of its operating frequencies.

3,676,804
INITIALIZATION OF ADAPTIVE CONTROL SYSTEMS

Kurt Hugo Mueller, Matawan, N.J., assignor to Bell Telephone Laboratories Incorporated, Murry Hill, Berkeley Heights, N.J.

Filed Feb. 22, 1971, Ser. No. 117,389
Int. Cl. H04b 3/04
U.S. Cl. 333—18 8 Claims



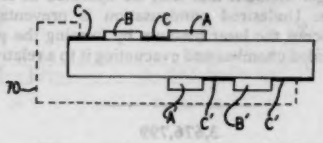
Adaptive control systems are brought to a predetermined reference state with respect to a plurality of attenuation coefficients by taking the signal at a preselected reference location rather than the normalized overall output as the signal to be approximated. In this way the adaptive process brings all variable subsystem attenuators to base level settings and the reference attenuator to a normalized level setting in response to an arbitrary input.

3,676,805
MONOLITHIC CRYSTAL FILTER WITH AUXILIARY FILTER SHORTING TABS

Warren Perry Mason, West Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 12, 1970, Ser. No. 79,880
Int. Cl. H03h 7/02, 9/32
U.S. Cl. 333—72 10 Claims

Energy loss in the short-circuiting tabs of the interior resonators of monolithic crystal filters is reduced by constructing the tabs in the form of auxiliary trapped energy filters having a passband with a center frequency that differs from the center frequency of the passband of the primary

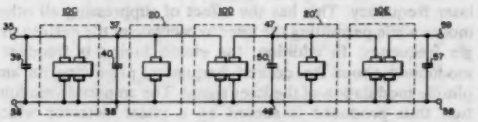


filter. The tabs or auxiliary filters act as reflectors that direct the energy that otherwise would be dissipated back into the trapped energy region of the main electrodes, thus enhancing overall filter efficiency.

3,676,806
POLYLITHIC CRYSTAL BANDPASS FILTER HAVING ATTENUATION POLE FREQUENCIES IN THE LOWER STOPBAND

Henry J. Orchard, San Mateo, and Desmond F. Sheahan, San Carlos, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 6, 1969, Ser. No. 874,522
Int. Cl. H03h 9/20, 9/32
U.S. Cl. 333—72 5 Claims

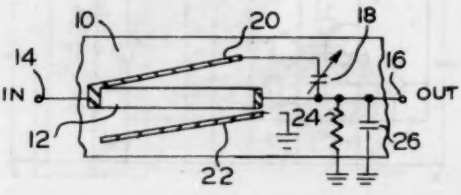


A bandpass crystal filter of the type which uses coupled resonators and has a shunt capacitor at the junction between pairs of coupled resonators exhibits a stopband loss-frequency characteristic which is approximately symmetrical and monotonic. In some applications, it is necessary to sharpen up at least one side of the filter and this extra loss could be obtained if one or more frequencies of infinite loss could be added in the adjacent stopband. By connecting the parallel combination of a capacitor and a two-terminal quartz resonator across the junction between pairs of coupled resonators, the loss-frequency characteristic may be modified to include frequencies of infinite loss in the lower stopband.

3,676,807
FILM ATTENUATOR WITH DISTRIBUTED CAPACITANCE HIGH FREQUENCY COMPENSATION

Machiel Boer, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 19, 1971, Ser. No. 144,787
Int. Cl. H03h 7/24
U.S. Cl. 333—81 A 10 Claims



A thick film attenuator including series and shunt resistances coated on an insulator substrate is described in

which the first distributed capacitance of a lead conductor connecting a variable capacitor in parallel with the series resistance is compensated by the second distributed capacitance of a ground conductor on the opposite side of such series resistance. This prevents the attenuation ratio from changing with frequency for high frequency input signals which tends to be caused by such first distributed capacitance with high impedance attenuators due to the greater length of the series resistance. The spacing between the lead conductor and the series resistance decreases with distance along such resistor from the terminal connected to the variable capacitor, while the spacing between the ground conductor and the series resistance increases with such distance to provide the first and second distributed capacitances which change hyperbolically with such distance so that the attenuation ratio of the capacitance divider is the same as that of the resistance divider at any point along the series resistance.

3,676,808

RESONATOR FOR ELECTROMAGNETIC WAVES OF THE MILLIMETRIC AND SUBMILLIMETRIC BAND

Evgeny Alexandrovich Vinogradov, Kozhevnicheskaya ulitsa, Ib, kv. 33, and Nataliya Alexandrovna Irisova, ulitsa Vavilova, 44, korpus 4, kv. 74, both of Moscow, U.S.S.R.

Filed June 29, 1970, Ser. No. 50,428
Int. Cl. H01p 7/06
U.S. Cl. 333—83 **3 Claims**

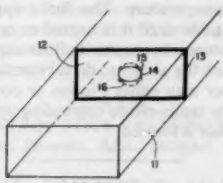
A resonator for electromagnetic waves of the millimetric and submillimetric band, comprising main reflectors in the form of mountings wherein parallel conductors are strung at a spacing smaller than the length of electromagnetic waves in the selected band, and at least one additional reflector identical to, and disposed between, said main deflectors, the plane of said additional reflector being parallel to the planes of the main reflectors.

3,676,809

THIN FILM MICROWAVE IRIS

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert L. Ramey; Hugh S. Landes, both of Charlottesville, and Eugene A. Manus, Blacksburg, all of Va.

Filed May 28, 1970, Ser. No. 41,345
Int. Cl. H01p 1/00, 5/02
U.S. Cl. 333—98 R **1 Claim**



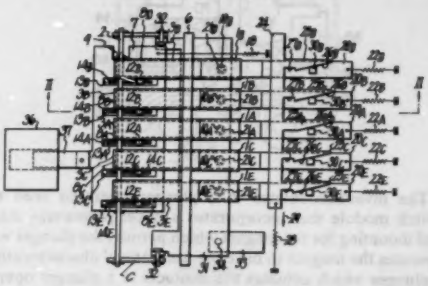
A thin film microwave iris including an aperture, inside a microwave waveguide transverse to the flow of microwave energy in the waveguide with the thin film electrically connected to the walls of the waveguide. Due to the flow of energy through the film as well as through the aperture, the characteristics of thin film irises are different from the characteristics of conventional irises.

3,676,810

PUSH BUTTON ASSEMBLY

Tetsuo Machida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 18, 1971, Ser. No. 144,580
Claims priority, application Japan, May 19, 1970, 45/42709; Aug. 29, 1970, 45/75792
Int. Cl. H01h 9/26
U.S. Cl. 335—159 **11 Claims**



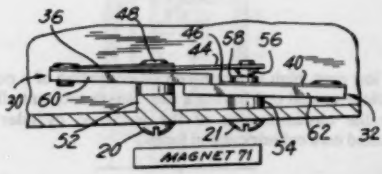
A push button assembly, for example, for selecting the operating condition or mode of a magnetic recording and reproducing apparatus or the like, has a single driving solenoid, motor or the like means which moves an actuator upon its energization in response to closing of a switch by depression of any one of a plurality of selecting members that are individually depressable. The selecting members are all movable as a group with the actuator of the driving means and, where depressed, each selecting member is coupled with a respective operating member to also move the latter with the actuator and thereby establish the desired operating condition. A locking means is provided to hold each operating member in its displaced position until another of the operating members is displaced. Further, each selecting member has a latch associated therewith to hold the selecting member depressed until the actuator of the drive means completes its movement.

3,676,811

MAGNETIC SWITCH

Philip Joseph Parlato, Kings Park, N.Y., assignor to Alarm Products International, Inc., Long Island City, N.Y.

Filed March 19, 1971, Ser. No. 126,068
Int. Cl. H01h 9/00
U.S. Cl. 335—205 **9 Claims**

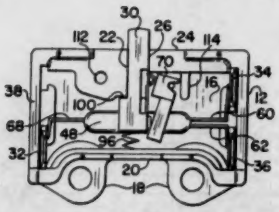


A magnetic switch device comprises a housing, two substantially planar bifurcated flexible members arranged in opposing relationship with one pair of distal ends of corresponding leg segments overlapping and being free to move while the other pair of distal ends are fixed to the housing. Armatures are attached to the corresponding leg segments and are moved responsive to a magnetic force to cause contacts on the overlapping distal ends to move together with a brushing motion.

3,676,812
PLUNGER OPERATED REED RELAY SWITCH

Voyta E. Wrabetz, Hubertus, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed July 14, 1971, Ser. No. 162,496
Int. Cl. H01h 5/00
U.S. Cl. 335—205 10 Claims

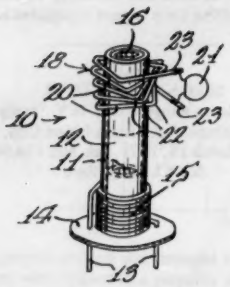


The invention relates to a plunger operated reed relay switch module that incorporates a novel permanent magnet and mounting for the magnet which permits the plunger which operates the magnet to have the same travel characteristics as a plunger which actuates the contacts in a plunger operated snap switch. The switch module thus may be used as a replacement for a snap switch in a device when the device is required to control the input signals in a solid state logic circuit.

3,676,813
NON-CIRCULAR HIGH Q COILS

John O. Renskers, Crystal Lake, Ill., assignor to Coilcraft, Inc., Cary, Ill.

Continuation-in-part of Ser. No. 812,836, April 2, 1969, abandoned. This application May 12, 1971, Ser. No. 142,723
Int. Cl. H01f 27/28
U.S. Cl. 336—189 7 Claims



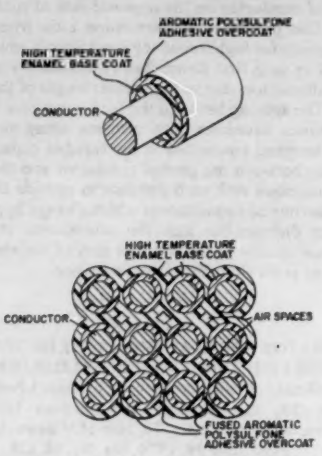
A low cost, high Q mounted coil consisting of a non-circular, close wound coil having a turn length substantially longer than the circumference of the inscribed cylinder thereof mounted on a cylindrical coil form.

3,676,814
HIGH TEMPERATURE ADHESIVE OVERCOAT FOR MAGNET WIRE

Floyd F. Trunzo, Monroeville, and David A. Scheidmantel, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1970, Ser. No. 9,372
Int. Cl. H01b 3/42; H01f 27/30
U.S. Cl. 336—205 9 Claims

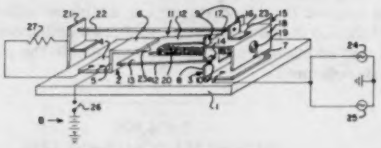
An electrical conductor is coated with a high temperature thermosetting wire enamel base coat and overcoat of an aromatic thermoplastic polysulfone adhesive to form a composite insulated electrical conductor.



3,676,815
THERMALLY SENSITIVE CONTROLS FOR ELECTRIC CIRCUITS

Gideon A. Du Rocher, Mount Clemens, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed July 28, 1969, Ser. No. 845,467
Int. Cl. H01h 37/32, 37/50; G01k 5/48
U.S. Cl. 337—140 17 Claims



A control for an electric circuit of the kind having switching means adjustable between circuit making and breaking relations and wherein the adjustment of the switching means is effected by a thermally sensitive force applying member acting on the switching means, the force exerted by the force applying member being substantially instantaneously variable in response to changes in its temperature to and from a predetermined critical temperature. The force applying member is dimensionally stable until it is heated to or cooled below its critical temperature whereupon it either expands or contracts suddenly and with the ability to do substantial work. The force applying member may either expand or contract in response to an increase in temperature depending upon the manner in which the member is formed.

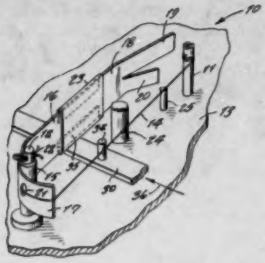
3,676,816
INSTANT OPERATING COILLESS RELAY

Carl J. Drathschmidt, 57 Sullivan St., New York, N.Y.

Filed March 2, 1971, Ser. No. 120,109
Int. Cl. H01h 51/00, 61/06, 71/18
U.S. Cl. 337—134 3 Claims

A relay of coilless type wherein there are a pair of spaced apart conductor posts, and a resistance wire therebetween carrying an electric current from one post to the other, in se-

ries with operating coil or resistor, causing the wire to heat up and expand so to release a phosphor bronze spring strip which



is pulled sidewardly by a permanent magnet due to small piece of steel shim stock being bent around the phosphor bronze spring strip.

3,676,817

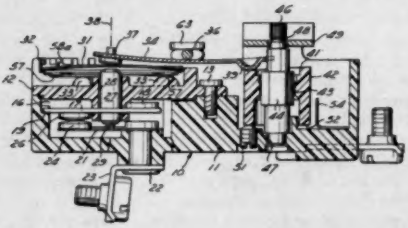
ADJUSTABLE THERMOSTAT

Howard W. Bletz, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed Feb. 22, 1971, Ser. No. 117,443

Int. Cl. H01h *37/18, 37/20, 37/52*

U.S. Cl. 337—347 **18 Claims**



An adjustable thermostat in which an adjusting spring applies an adjustable force to a bimetal snap disc. The adjusting spring is also formed of bimetal and its temperature induced forces add to the temperature induced forces of the disc so that the sum thereof is available for switch operation. The spring rate of the adjusting spring can be adjusted by moving a fulcrum lengthwise of the adjusting spring to provide the thermostat with the desired differential temperature in operation. Such differential temperature adjustment does not materially alter the temperature adjusting range provided by a cam which engages the end of the adjusting spring. The bimetal snap disc is supported in a cup element having cam surfaces along one side so that the position of the snap disc is adjusted by rotating the support cup, thus minimizing or reducing the necessity of selective fitting of the thermostat elements.

3,676,818

CONTROL STICK TRANSDUCER

Kenneth L. Oliver, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed May 10, 1971, Ser. No. 141,898

Int. Cl. G01l *1/22*

U.S. Cl. 338—2 **8 Claims**

A transducer for monitoring forces applied to an aircraft control stick includes a spring flexure which acts as a primary restraint to loads applied to the control stick.

The spring flexure is secured to the transducer housing and disposed in a horizontal plane. The control stick handgrip is supported above the spring flexure by means of a vertical member passing through a central hub of the spring flexure so that the flexure provides a resilient mounting responsive to forces applied to the handgrip in any horizontal direction. A counterbalance suspended from the same hub of the flexure cancels the effect of any acceleration forces parallel to the spring flexure that may be induced in the mass of the handgrip and its mounting.

Cantilevered load beams are arranged to deflect in response to loads applied to the handgrip in excess of an adjustable threshold value. Strain gauges are used to measure the deflection of the load beams and thus provide electrical output signals indicative of the amount of command force applied to the handgrip. Stop members limit the deflection of the spring flexure to values suitable for use with the strain gauges.

3,676,819

CONTACT-FREE POTENTIOMETER

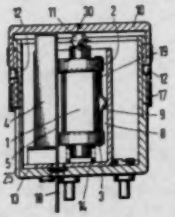
Werner Keller, Olching, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 11, 1969, Ser. No. 884,167

Claims priority, application Germany, Dec. 17, 1968, P 18 15 160.5

Int. Cl. H01c *7/16*

U.S. Cl. 338—32 R **13 Claims**



A stationary elongated armature body and a permanent magnet are connected in a magnetic circuit. A guide plate of non-magnetic material is interposed between the armature body and the magnet. The guide plate is adjacent the armature body and has a recess formed therethrough and a galvanomagnetic resistor is embedded in the recess. The guide plate guides the magnet in gliding relation.

3,676,820

GAS DETECTING ELEMENT AND METHOD OF MANUFACTURING SAME

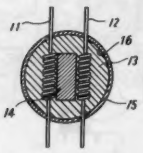
Naoyoshi Taguchi, 1-2, Ikedauemachi, Nagata-ku, Kobe, Japan

Filed Jan. 30, 1970, Ser. No. 7,150

Claims priority, application Japan, Feb. 6, 1969, 44/9088; Feb. 6, 1969, 44/9089

Int. Cl. H01c *13/00, 17/00*

U.S. Cl. 338—34 **8 Claims**



A gas detecting element formed of a semiconductor material capable of adsorbing gases and exhibiting a relatively high change in electrical conductivity, the semiconductor material containing gold, gold oxide or a compound convertible into gold or gold oxide after mixture with said semiconductor material and the method for making such an improved detector.

3,676,821

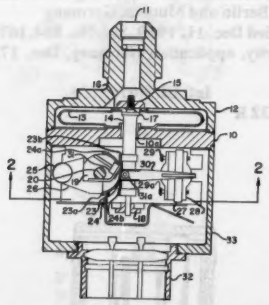
FLUID-PRESSURE TRANSDUCER

Roy R. Segerdahl, Belmore, and Joseph L. Jonke, Bethpage, both of N.Y., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Dec. 5, 1968, Ser. No. 781,333

Int. Cl. H01c *13/00*

U.S. Cl. 338—41 **3 Claims**



Apparatus for converting a change in fluid-pressure into mechanical motion of a part, which motion can be used to generate a suitable output signal. Two bands affixed to a sheave are wound thereon, side by side, in opposite directions. The free ends of the bands are connected to a pushrod which is in the same plane and at right angle to the axis of the sheave. The clockwise wound band is connected to the right of the axis of the sheave and other band is connected to the left thereof. The pushrod is connected at one of its ends to a pressure capsule which deflects when the fluid-pressure acting thereon is changed. This deflection causes the sheave to rotate and generate the desired output effect.

3,676,822

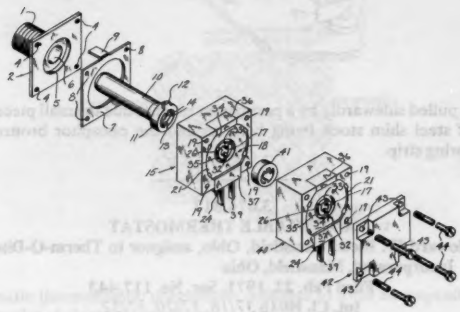
MODULAR POTENTIOMETER

James E. Slagg, South Milwaukee; Grant W. Nelson, Milwaukee; Jerry T. Moffitt, Cudahy, and Joseph A. Balint, Wauwatosa, all of Wis., assignors to Allen-Bradley Company

Filed April 8, 1971, Ser. No. 132,463

Int. Cl. H01c *9/02*

U.S. Cl. 338—132 **24 Claims**



A potentiometer module, containing circular resistance and collector paths with a sliding control bridging between the paths, is combined with other similar modules in side by side, stacked relation to form one of a possible assortment of multiple potentiometer controls. The modules are fastened together by four stack bolts extending through them and screwed at one end into a face plate formed on the back of a threaded bushing. The face plate and bushing are at one end of the stacked modules, and a shaft inserted through the bushing controls all modules simultaneously. Several alternative arrangements of the modules are shown, and in one, for example, two concentric shafts each control selected modules. Each potentiometer module has a rectangular case containing a rotor with a movable contact. A collector ring is disposed axially to one side of the movable contact and a resistance track deposited on a base is disposed to the other side of the movable contact. The rotor passes completely through the module and has an opening through it to allow passage of shafts connected to other modules.

3,676,823

MINIATURE VARIABLE RESISTOR WITH GUIDE MEANS FOR SLIDING CONTACTS

Tatsuo Fujii, and Yutaka Watano, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 10,366, Feb. 2, 1972, abandoned. This application May 10, 1971, Ser. No. 142,060

Claims priority, application Japan, Feb. 19, 1969, 44/13811; Feb. 19, 1969, 44/13812

Int. Cl. H01c *9/02*

U.S. Cl. 338—139 **7 Claims**

A variable resistor of rotary type has a metallic thin film resistor vacuum deposited on a disk and a brush slidably contacting with said resistor. The contact member slides over the path in a plane, and a tap portion partially overlapping with a slide resistor and having a surface resistance lower than that of the resistor is disposed below the path. The resistance between the terminal at one end of the resistor and the contact is varied in response to the displacement over the path of the brush on

the resistor. The contact can be assured to move along the same path in radial and circumferential directions, and the

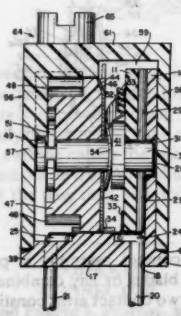
reproducability of the position of the contact is attained with high accuracy.

3,676,824

GEAR-DRIVEN TRIMMING POTENTIOMETER

John J. Mulqueen, Hopatcong, and Edward Schoettly, Madison, both of N.J., assignors to Vishay Intertechnology, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 7,562, Feb. 2, 1970, abandoned. This application Sept. 18, 1970, Ser. No. 73,580
Int. Cl. H01c 9/02
U.S. Cl. 338—162 6 Claims



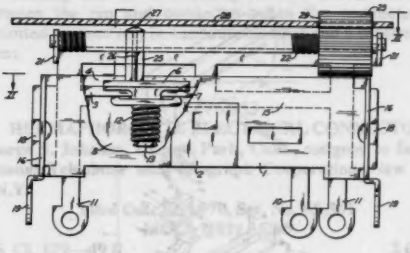
A trimming potentiometer comprising a base with a flange extending perpendicular to it and a cover that encloses the flange and is sealed to the base. Supported on the flange is an assembly comprising a post, a non-conductive plate on which an arcuate resistive path is disposed, a contact plate with a contact finger that presses against the resistive element, and a gear journaled on the shaft and releasably coupled to the plate to move the finger along the arcuate resistive path. The shaft, the plate and finger, and the gear are joined together, and a spring is provided to force the plate into engagement with the gear. The cover has a lead screw mounted in it with a head available to the outside and the threaded portion in mesh with the gear. The axial direction of the screw may be either perpendicular to the base or parallel with it.

3,676,825

SCREW ACTUATED LINEAR MOTION POTENTIOMETER

David A. Olson, Ridgway, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed July 8, 1971, Ser. No. 160,619
Int. Cl. H01c 9/02
U.S. Cl. 338—181 7 Claims



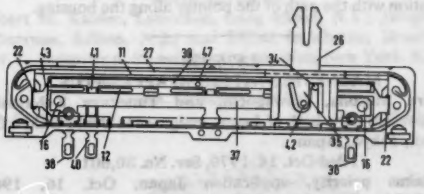
The front wall of the oblong case of a linear motion potentiometer is provided with a longitudinal slot, in which a slide is disposed. The slide carries a bridging contact inside the case, where it engages spaced parallel resistor and collector elements. In front of the case and parallel to the slot is a lead screw rotatably supported from the case. Rigidly mounted on one end of the screw is a member for rotating it. An arm that is rigidly joined to the slide extends outwardly across the screw and is provided with a portion registering with the screw thread. When the screw is turned, it will move the arm and slide lengthwise of the case.

3,676,826

SLIDE POTENTIOMETER

Henry Gazeley Howitt, Glamorgan, South Wales, assignor to A.B. Electronic Components Limited, Glamorgan, South Wales

Filed Oct. 20, 1971, Ser. No. 190,805
Int. Cl. H01c 5/02
U.S. Cl. 338—183 6 Claims



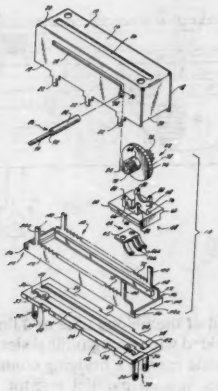
A pair of substantially identical body halves are jointed face to face to leave a slot in one surface for a slider. One or both body halves have a resistive track and a collector track including a center terminal. The slider has sliding contacts to connect the resistive track and collector track. A dust shield is mounted so as to be stationary in the body to prevent ingress of dust through the slot. The slider has cooperating body parts on either side of the dust shield so as to be slidable without moving the dust shield.

3,676,827

CONTROL MECHANISM FOR ADJUSTABLE ELECTRICAL DEVICE INCLUDING INDICATING MEANS

Yukihiko Nomura, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1971, Ser. No. 201,751
Int. Cl. H01c 9/02
U.S. Cl. 338—183 16 Claims



A control means for adjusting an electrical device having an adjustable parameter is provided in a simple, inexpensive and compact design. In the disclosed embodiment, the electrical device is a variable impedance device of the type having an electrical contact linearly movable within an elongated housing. The contact is carried by a slide which in turn is controlled by a rotatable control member operatively drivingly connected to the housing frame and having a control wheel extending through an elongated slot in the housing. The control member is provided with an axially located aperture receiving one end of an indicating pointer, that pointer having a portion of reduced cross section extending through a second longitudinal slot in the housing. The pointer is retained in its operative position within the aperture of the rotatable control member by the engagement of a shoulder thereon with the inner surface of the housing wall and is movable linearly along the housing with the slider and contact.

A scale means is adapted to cooperate with the pointer to provide accurate readout of the adjusted impedance value. In a preferred embodiment, that scale means is in the form of a transparent window opening in an outer casing generally in registration with the path of the pointer along the housing.

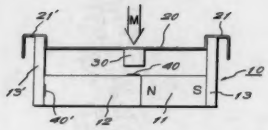
3,676,828

MAGNETIC SWITCHING APPARATUS

Noboru Masuda, Kawaguchi, and Tunekazu Kobayashi, Kawasaki City, both of Japan, assignors to Denki Onkyo Co. Ltd., Tokyo, Japan

Filed Oct. 14, 1970, Ser. No. 80,601
Claims priority, application Japan, Oct. 16, 1969, 44/98424; Oct. 16, 1969, 44/98425; Oct. 25, 1969, 44/101030
Int. Cl. H01c 7/16
U.S. Cl. 338—32 H 10 Claims

A switching apparatus comprised of a base with a magnet and a block made of magnetic material coupled to the magnet while contacting a magnetic pole surface of the magnet, a spring plate which is magnetically coupled to the base and which is extended between both ends of the base, a short-circuiting portion made of magnetic material which is located at a position opposite to and near the magnetic pole of the magnet of the block made of magnetic material of the base while the short-circuiting portion remains away from the base whenever the spring plate is at the home position, and at least one galvano-magnetro effect device which is located at a position



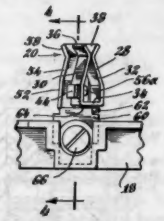
on the said magnetic block of the base so that the quantity of magnetic flux to which the galvano-magnetro effect device is exposed varies when the short-circuiting portion contacts the base.

3,676,829

CONTACT SPRING ASSEMBLY

Albert J. Gartland, Jr., Trumbull, and Michael J. D'Amato, New Haven, both of Conn., assignors to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed Oct. 30, 1970, Ser. No. 85,471
Int. Cl. H01r 27/00
U.S. Cl. 339—33 10 Claims



A female power contact assembly is provided for both parallel and tandem blades or any combination thereof. The assembly comprises two contact arms constituting a U-shaped contact for tandem blades, and a single contact arm riveted to one side of the U-shaped contact and constituting a second contact therewith for parallel blades. The single contact arm is part of a combination of a contact arm and binding plate.

3,676,830

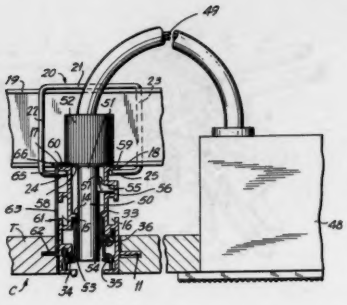
MULTIPLE ACCESS ELECTRIC POWER DISTRIBUTION ASSEMBLY

Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, New York, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,615
Int. Cl. H01r 9/00
U.S. Cl. 339—21 R 11 Claims

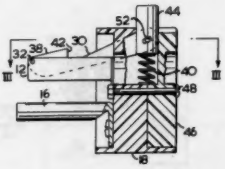
An elongated electrical distribution assembly in the nature of a channel or track and connectors therefor, adapted to be

incorporated in a ceiling structure and providing access for readily effecting electrical connection from both above and



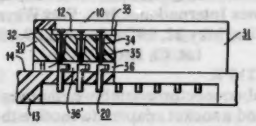
below the supported ceiling structure at multiple displaced positions along the length thereof.

3,676,831
ELECTRIC PLUG
Carey Bergwall, 1005 1st St. S.W., Calgary 3, Alberta, Canada
Filed March 12, 1970, Ser. No. 18,898
Claims priority, application Canada, Dec. 5, 1969, 069,106
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 R **8 Claims**



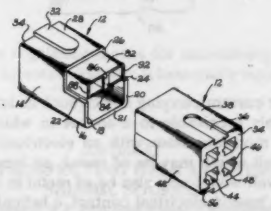
A simple inexpensive electric plug will lock into a wall socket. It accommodates a latch which fits, edgewise into a pin so as to give a great depth of locking surface. A cam-like incline automatically depresses the latch as it enters the socket or receptacle and a spring causes the latch to engage with the rear face of the receptacle front moulding. The latch may be depressed (so that the plug may be removed) by means of a pushbutton.

3,676,832
CONNECTOR
Robert L. Judge, and Eugene S. Pearson, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 28, 1970, Ser. No. 101,662
Int. Cl. H01r *13/62*
U.S. Cl. 339—75 M **10 Claims**



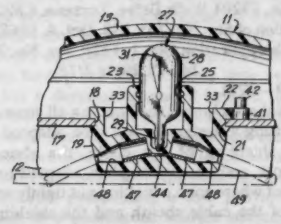
A female connector for insertion into a printed circuit board and the like, the connector comprising an axially extending conductive tubular body portion having a loop-type receptacle at one terminal end of the body portion, the loop having a greater dimension than the diameter of a male connector-type pin so as to permit essentially zero axial force insertion of the pin into the receptacle. The receptacle includes a pair of resilient, radially projecting arms which converge from the receptacle and in conjunction with the receptacle define a converging path between the receptacle and the arms whereby relative lateral motion between the pin and female connector causes the pin to be engaged and retained by and between the pair of resilient arms. Also disclosed is apparatus for shifting one of or creating relative lateral movement between the pin and connector when the connectors are mounted respectively in a module element and a substrate element.

3,676,833
HERMAPHORODITE ELECTRICAL CONNECTOR
George S. Johnson, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,361
Int. Cl. H01r *25/00*
U.S. Cl. 339—49 R **2 Claims**



An electrical connector formed of an insulating member having a plurality of contact passageways. The passageways have an enlarged slotted section which divide each passageway into a first portion and a second portion. A contact terminal inserted in the passageway contains a pair of folded sections whose width is less than the width of the first portion but greater than the width of the second portion. A mounting flange portion which is formed adjacent a mating surface section of one of the folded sections of the contact terminal is insertable in the slotted section and one folded section is positioned in the first portion of the passageway. The insulator member is matable with a second identical insulator member utilizing identical contacts. The contacts are removably mounted in the housing.

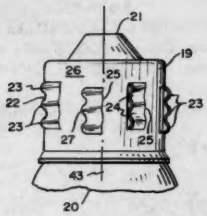
3,676,834
VEHICLE LAMP
Robert M. Kaldor, Laurelton, Long Island, N.Y.; Joseph V. Borruso, Edison, N.J., and Elliott Goldbaum, Brooklyn, N.Y., assignors to Signal-Stat Corporation, New York, N.Y.
Filed Nov. 12, 1970, Ser. No. 88,788
Int. Cl. H01r *13/48*
U.S. Cl. 339—59 L **9 Claims**



A vehicle lamp especially suitable for resiliently mounting and electrically connecting a wedge-type bulb. The rigid lamp

base receives a resilient socket having integrally molded contacts and the bulb is gripped above its base on the envelope portion to retain it in the socket and resiliently isolate it from road shocks.

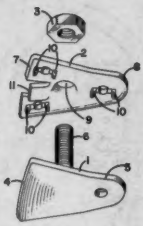
3,676,835
ELECTRICAL CONNECTOR
James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Continuation-in-part of Ser. No. 111,571, Feb. 1, 1971, abandoned. This application April 20, 1971, Ser. No. 135,553
Int. Cl. H01r *9/12, 17/04*
U.S. Cl. 339—73 **11 Claims**



An electric current carrying device such as an electric light bulb releasably receivable in a socket in which the device comprises a mounting base with an electrically conducting peripheral wall which may be of metal, an inner electrically conducting wall which may also be of metal in the socket for receiving the base in electrical contact, a helical screw thread on either the base or the socket wall and a plurality of circumferentially spaced spring tabs on the other wall. Each tab has a plurality of ridges spaced from each other in a direction parallel to the axis of the base or socket with each ridge lying along a section of a helix of substantially the same pitch and dimensions as those of the screw thread for engaging in the screw thread and retaining the base in the socket in its innermost position. The spring tabs are elongated and each has one edge that is parallel to the axis fixed to its wall as by being integral therewith and an opposite edge free in a cantilever construction and spaced from its wall with the result that when the base is inserted in the socket the tabs are compressed toward their wall to exert a holding spring action serving to retain the base in the socket and the helical section ridges on the tabs engage the screw thread at a plurality of circumferentially spaced areas not only to securely retain the base in the socket but also to provide good electrical contact between the walls and, as in the case of a light bulb, between the end contact members on the base and socket.

3,676,836
UNIVERSAL SHEATH BOND FOR COMMUNICATIONS CABLE
George W. Gillemot, 2615 Naple, Venice, Calif., and John T. Thompson, 19201 Wells Drive, Tarzana, Calif.
Continuation of Ser. No. 765,158, Oct. 4, 1968, abandoned. This application Oct. 1, 1970, Ser. No. 77,371
Int. Cl. H01r *7/18*
U.S. Cl. 339—97 R **57 Claims**

A universal attachment for bonding all sizes of shielded cables comprising a wedge-shaped shoe adapted to be inserted under the shielding of the cable, the shoe supporting a threaded post, and an anchor plate adapted to be positioned over the post whereupon a locking nut tightly secures substantial areas of the cable sheath and the shielding compressed between the shoe and anchor plate. The threaded post permits bonding of the shielding of the cable to that of other cables by means of an elongated strip of metal having holes therein adapted to fit over the post and be locked in place with a



second locking nut. An extension on the anchor plate permits the ready grounding of the shielding.

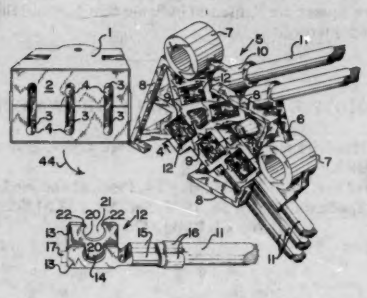
3,676,837
MULTIPLE CONDUCTOR CABLE CONNECTOR
Albert P. Newman, Springfield Township, Hamilton County, Ohio, assignor to Empire Products, Inc., Cincinnati, Ohio
Division of Ser. No. 761,254, Sept. 20, 1968, Pat. No. 3,588,783. This application July 1, 1970, Ser. No. 60,198
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 R **1 Claim**

A terminal connector for a multiple conductor electrical cable is provided which may readily be applied to the cable by the user rather than being integrally molded to the cable by a connector manufacturer. Union of leads to contacts is made, such contacts being within a contact holder, and the contact holder is then bodily incorporated into an insulating sleeve of resilient material. Despite the resiliency of the material of the sleeve, once the contact holder and sleeve are integrated, separation is prevented by providing a rib in one which extends into a groove in the other, and disposing a close fitting rigid jacket about the sleeve so that flexibility of the resilient sleeve is diminished. Retention of cable within sleeve by means of a partial ring, and of a female contact which spring loads an entering male contact, are both also contemplated.

3,676,838
ELECTRICAL CONNECTORS
Marvin E. Hartz, Grosse Pointe Farms; Anthony J. Taormina, Detroit, and Stephen J. Greblk, Roseville, all of Mich., assignors to Essex International, Inc., Fort Wayne, Ind.
Filed May 22, 1970, Ser. No. 39,658
Int. Cl. H01r *11/22*
U.S. Cl. 335—217 R **8 Claims**

An electrical connector assembly comprises a spherical or ball terminal and a socket adapted to receive the ball and having a substantially U-shaped configuration including a pair of opposed sides or arms spaced apart a distance less than the diameter of the ball, each of the arms having an opening therein of smaller diameter than that of the ball. Preferably,

each of the arms of the socket has a slot which communicates with its associated opening, each slot including an inwardly

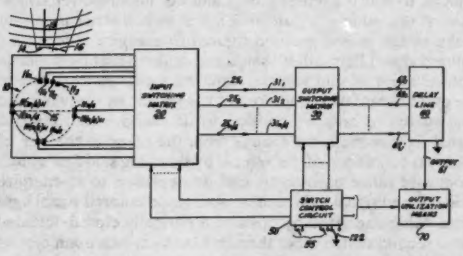


tapering throat portion which functions to guide the ball terminal into the openings.

3,676,839
SWITCHING APPARATUS FOR A PHASED TRANSDUCER ARRAY

Charles J. Wohl, Englewood Cliffs, N.J.; Jonathan L. Schere, Hartsdale, and Thomas V. Costello, Bronx, both of N.Y., assignors to Edco Corporation, College Point, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,315
Int. Cl. G01s 3/00
U.S. Cl. 340—6 R **5 Claims**



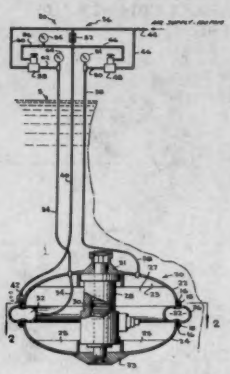
Analog switching apparatus electrically focuses a phased transducer array by interconnecting the outputs of selected transducer elements with selected taps of a multitapped electrical delay line. A first portion of the switching apparatus selects a subset of the transducer array to define a focusing search sector, and a second switching apparatus portion sequentially advances through a complete switching cycle for each transducer subset selection to traverse the focus of the array across the search sector in discrete increments.

3,676,840
UNDERWATER SEISMIC ACOUSTIC ENERGY SIGNAL SOURCE

Marvin G. Bays, Jackson, Miss., assignor to Delta Exploration Company, Inc., Jackson, Miss.

Filed Sept. 9, 1970, Ser. No. 70,794
Int. Cl. H04b 11/00
U.S. Cl. 340—12 **13 Claims**

An acoustic signal means is provided with two signal radiating hollow shell members which are connected by a hydraulic cylinder for outward relative movement with an inflatable toroidal connector member connecting circular edges of the shell members to define a main interior chamber with the shell members and pressure regulating means for maintaining pressure on the interior of the toroidal member at a level slightly higher than the maximum pressure differential between the main interior chamber and the external environment and also

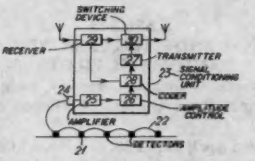


having pressure regulating means for maintaining an average pressure in the internal chamber substantially equal to the external pressure.

3,676,841
SEISMIC PROSPECTING WITH A CONTINUOUS SEISMIC SOURCE

Nigel Allister Anstey, 12, Percival Road, Orpington, Kent, England

Filed Sept. 11, 1969, Ser. No. 857,123
Claims priority, application Great Britain, Sept. 13, 1968, 43,640/68
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 CC **11 Claims**

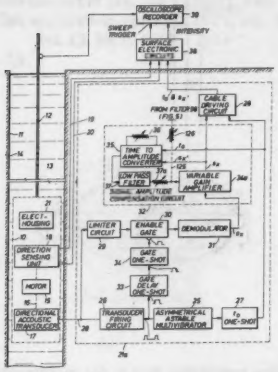


A method of seismic prospecting involves making seismic records utilizing a seismic source in substantially continuous operation and motion, and in which a first signal representative of the time-variant and space-variant waveform radiated from the moving seismic source is derived directly therefrom, while a second signal is derived indirectly therefrom via a detector array, and after filtering these signals if necessary the first signal is divided into segments which are each cross-correlated and matched with their counterpart(s) in a segment of the second signal having the same starting time as the first-signal segment but a duration extended beyond that of the first-signal segment by a period representing the maximum seismic travel time of interest, the time-shift between the first-signal segment and its counterpart(s) in the second-signal segment being detected and recorded. Apparatus for performing this method of seismic prospecting is also provided, which consists essentially of a continuous seismic source, a transducer responsive directly to that source, a detector array, communication linkages and a recording station.

3,676,842
WELL LOGGING METHODS AND APPARATUS

Jimmy G. Lee, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,579
Int. Cl. G01v 1/28, 1/36
U.S. Cl. 340—15.5 BH 26 Claims

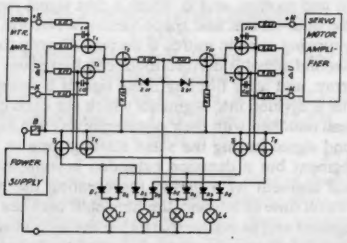


In accordance with illustrative embodiments of the present invention, techniques are disclosed for compensating acoustic well logging measurements for variations in one or more conditions of a well bore. More particularly, these measurements are compensated for variations in well bore cross-section, and well bore fluid acoustic impedance and velocity. These compensation techniques have particular significance in connection with systems of the type which scan a well bore wall by rotating a transducer means which emits directional bursts of high frequency acoustic energy and receives energy reflected off the bore wall. The electrical signals produced by this received energy are suitably processed to provide information relative to the character of the media forming the well bore wall.

3,676,843
DIRECTIONAL AND PITCH TRIM INDICATOR FOR AUTOMATIC PILOTS

Karlhans Schwartz, Owingen, Germany, assignor to Bodenseewerk Gergtetechnik GmbH, Uberlingen/Bodensee, Germany

Filed April 27, 1970, Ser. No. 32,068
Claims priority, application Germany, Apr. 30, 1969, P 19 22 076.9
Int. Cl. B64c 13/18
U.S. Cl. 340—27 R 2 Claims

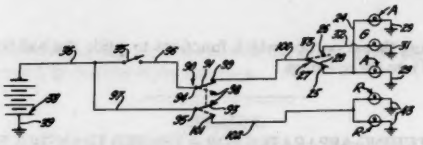


Four lights are positioned in a square. When a directional correctional signal from an autopilot exists for a predetermined length of time and is above a given magnitude, lights at one or the other sides of the square are lighted to indicate that face and the direction involved. When a pitch correctional signal from the autopilot exists for a predetermined length of time and is above a given magnitude, lights at one or the other ends of the square are lighted to indicate that fact and the particular pitch involved.

3,676,844
AUTOMOTIVE VEHICLE SIGNAL LIGHT WARNING METHOD

Jack R. Hendrickson, 3665 Burning Tree Drive, Bloomfield Hills, Mich.

Division of Ser. No. 728,935, May 14, 1968, abandoned. This application April 26, 1971, Ser. No. 137,511
Int. Cl. B60q 1/26
U.S. Cl. 340—71 6 Claims

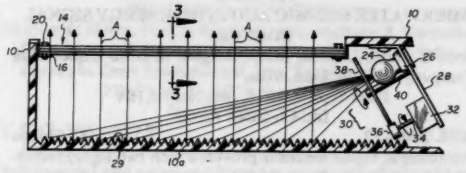


An automotive vehicle rear end signal light warning method for signaling changes in the condition of an automotive vehicle's accelerator for use with an automotive vehicle which utilizes a convention method of warning as to application of the vehicle's brakes consisting of energizing at least one red light visible from the rear of said vehicle. Said warning method comprising signaling one or the other of two conditions of the vehicle, to wit: the under power and not under power conditions of the vehicle, by utilizing a first switch other than said brake switch in one position thereof to energize at least one colored signal light other than a red brake signal light visible from the rear of said vehicle, signaling a change from one to the other of said two conditions of the vehicle by throwing said first switch to another position to de-energize said colored signal light, signaling a change from the other to the one of said two conditions of the vehicle by throwing said first switch from said other position to said one position to re-energize said colored signal light, and disabling said colored signal light from being energized by opening a normally closed actuated open second switch other than said brake switch upon closing of said brake switch, said method operative in conjunction with said conventional method of warning as to application of the vehicle's brakes.

3,676,845
TURN SIGNAL INDICATING SYSTEM

Anthony Siksai, 2705 Lahser Road, Bloomfield Hills, Mich.

Filed Feb. 19, 1970, Ser. No. 12,603
Int. Cl. B60q 1/38
U.S. Cl. 340—87 9 Claims



A turn signal indicating system for a vehicle wherein a rotary and a stationary polarized sheet are mounted with respect to an end of a vehicle, along with a light source. A light inter-

cepting sheet having a pattern of embossed lines formed thereon is disposed in the path of the light between the polarized sheets so that, upon rotation of the rotary sheet, traveling shadows are produced which give the illusion of linear motion in the direction to be turned.

3,676,846

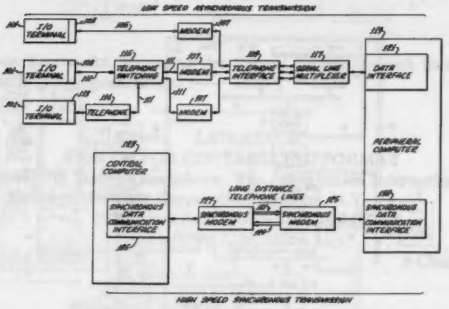
MESSAGE BUFFERING COMMUNICATION SYSTEM

Michael D. Busch, Corona Del Mar, Calif., assignor to Call-A-Computer, Inc.

Division of Ser. No. 766,384, Oct. 9, 1968, Pat. No. 3,560,936. This application July 9, 1970, Ser. No. 61,007

Int. Cl. G08c *25/00*

U.S. Cl. 340—146.1 BA **8 Claims**



Apparatus and method for transmitting data on a time-shared basis between a plurality of low-speed sources and a high-speed source over a communication circuit. Byte-serial data is initially transmitted at a relatively low rate from a plurality of remote sources (terminals) to a nearby peripheral computer which temporarily stores the incoming data in a memory unit and arranges it into strings of data blocks. The stored data is later transmitted as messages of one or more data blocks at a much faster rate over a communication circuit to a central computer. These data blocks may be either text blocks containing the temporarily stored data or control blocks containing information regarding the status of remote terminals. In addition, each message contains an acknowledge block whose purpose is to facilitate the detection and correction of data transmission errors. The central computer checks all incoming blocks for errors and acknowledges only those that have been correctly received. Blocks received in error by the central computer are not acknowledged, and are retransmitted by the peripheral computer until they are correctly received. Conversely, messages consisting of acknowledge, text, and control blocks are transmitted from the central computer to the peripheral computer over the communication circuit at high speed, the data is temporarily stored in the peripheral computer's memory and is later transmitted to the correct remote destination (terminal) at low speed. Error detection and correction performed on these messages is similar to those performed on messages traveling in the opposite direction.

3,676,847

CHARACTER RECOGNITION SYSTEM WITH SIMULTANEOUS QUANTIZATION AT A PLURALITY OF LEVELS

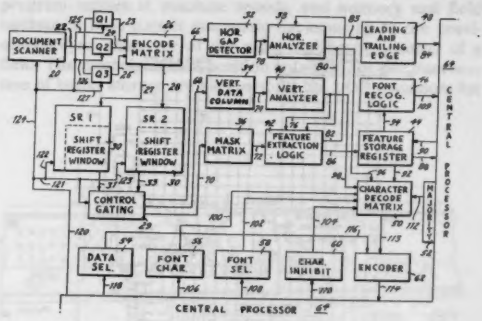
Melvin E. Partin, Montgomeryville, Pa., assignor to Scan-Data Corporation, Norristown, Pa.

Filed June 15, 1970, Ser. No. 46,091

Int. Cl. G06k *9/10*

U.S. Cl. 340—146.3 AC **5 Claims**

A character recognition system is provided which includes a plurality of quantizers for generating a binary quantization signal at a plurality of levels of a character pattern sampled within a field on a document. The character recognition



system also includes means for sampling the character pattern at each of the plurality of levels of quantization substantially concurrently.

3,676,848

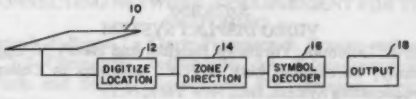
MACHINE RECOGNITION OF SYMBOLS

Ronald Edward Hall, Denver, and Larry Norman Hulbert, Littleton, both of Colo., assignors to Ferroxcube Corporation, Saugerties, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,261

Int. Cl. G06k *9/00*

U.S. Cl. 340—146.3 AC **6 Claims**



Character recognition system employing zone and direction encoding and decoding to recognize hand drawn real-time characters.

3,676,849

MULTI DIGIT VERIFICATION APPARATUS AND METHOD

George H. Malandro, 306 Dana St., Fremont, Calif.; Peter White, 2811 Woolsey St., Berkeley, Calif., and Henry J. Javora, 1499 Crosley Lane, San Jose, Calif.

Filed June 5, 1970, Ser. No. 43,674

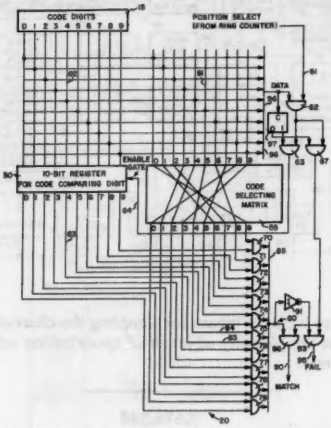
Int. Cl. G08b *29/00;* **G08c** *9/00;* **G06f** *11/10*

U.S. Cl. 340—149 R **17 Claims**

Apparatus for verifying an intended user of an identification code. An operator enters the characters of the identification code into the apparatus by a suitable device, such as a keyboard, and the entered identification code is compared for verification by a predetermined relationship among the characters of the identification code. The predetermined relationship is checked by the apparatus of the present invention to control the operation of a signalling device or a control mechanism.

Each identification code comprises a plurality of sets of characters. Each set of characters includes a code selecting character and a code comparing character. There is a comparator circuit for each code selecting character position in the entered identification code. Each comparator circuit serves to compare for verification the code comparing character of its associated set of characters with the preselected code within the apparatus selected by the code selecting character of the associated set of characters. Should

all the comparator circuits produce match output signals, then the apparatus verifies the user as an intended user. Should one



or more comparator circuits fail to produce a match output signal, then the apparatus does not verify the user as an intended user.

3,676,850

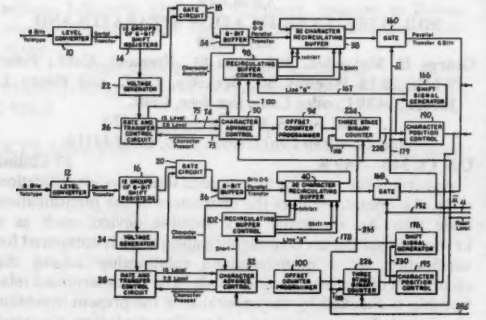
VIDEO DISPLAY SYSTEM

David A. Goldman, Yorktown Heights, and Henry N. Oppenheimer, Larchmont, both of N.Y., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation of Ser. No. 734,082, June 3, 1968, abandoned. This application Feb. 11, 1971, Ser. No. 114,669

Int. Cl. G08b *23/00*

U.S. Cl. 340—154 **5 Claims**



Teletype information signals from two different stock exchanges are stored in respective recirculating registers. Under the control of timing signals, the contents of the two registers are periodically advanced and alternately supplied to a character generator which converts the coded teletype information into an electronic array of corresponding letters or figures. Each array is sequentially scanned by a controlled electrical commutator and the scanned signals are supplied to a cathode ray tube for reproduction. The horizontal and vertical scanning coils for the tube are rotated 90° from their usual positions such that information signals are displayed as advancing transversely across the face of the device.

3,676,851

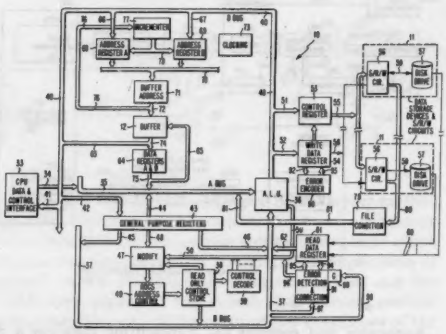
INFORMATION RETRIEVAL SYSTEM AND METHOD

Hal P. Eastman, Del Mar, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 31, 1970, Ser. No. 24,266

Int. Cl. G06f *11/00, 71/28*

U.S. Cl. 340—172.5 **11 Claims**



Information retrieval employing a search argument which is compared to a specified part of each of the stored data records that are searched. The search is conducted sequentially in the specified part of the record until a decision of non-equality is made or the entire part searched and found equal. A small portion of the record spanning the point of non-equality is stored. The search is then continued, called a "second search," until another decision of non-equality is made or the remainder of the part searched and found equal. Error detection of the record is then made. The resultant error syndrome is checked to determine whether an error occurred and, if so, whether it occurred in the specified part at or before the point of decision. If either no error occurred or it occurred after the point of decision, the result of the first search is correct and no error correction is required for the search. If the error occurred at the point of decision, the error is corrected and the corrected portion compared to the corresponding portion of the search argument and the result analyzed together with the first and second searches to determine the results of the search. If the error occurred prior to the point of decision, the specified part of the record is again read and the correction made to the erroneous portion thereof and analyzed to determine the results of the search.

3,676,852

MULTIPLE PROGRAM DIGITAL COMPUTER

Roger E. Abernathy, Boca Raton, Fla., and Nicholas S. Mitrofanoff, Rochester, Mich., assignors to International Business Machines Corporation, Armonk, N.Y.

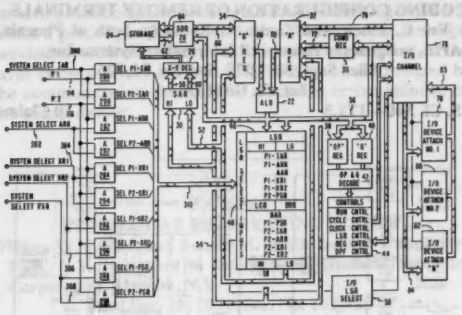
Filed July 20, 1970, Ser. No. 57,380

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **11 Claims**

A programmed data processor having addressable core storage, a central processing unit having one or more I/O

devices connected with it, two sets of program control registers—one for each of two program levels, and a switching



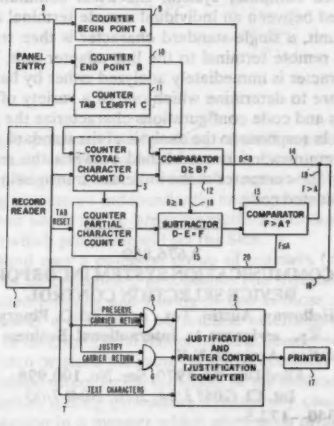
mechanism for operating the central processing unit in two different program levels.

3,676,853

SYSTEM FOR CONTROLLING FORMAT

David W. Terry, Georgetown, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 6, 1970, Ser. No. 25,710
Int. Cl. H04q 1/18; G05b 1/01
U.S. Cl. 340—172.5 6 Claims



A system which accepts an input tape and provides an output copy having both preserved line endings and justified lines which are controlled and determined by means of a variable width control zone. The width of the zone may be varied to assure proper line endings. The occurrence of a total overlap of the zone will result in justified lines, whereas a partial, or no overlap will result in preserved line ending regardless of the side of the zone involved.

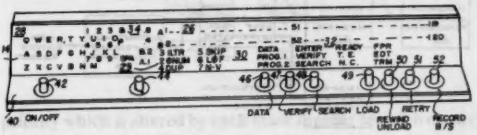
3,676,854

KEYBOARD TO TAPE DATA INPUT PREPARATION UNIT

Heinz H. Findeisen, Milford, Mass.; James D. Kallmeyer, Springfield, Ill.; David G. Sokol, Auburn; James H. Stein, Auburn, Ill.; Thomas R. Thomas, Springfield, Ill., and Jack R. Bowers, Petersburg, Ill., assignors to Sangamo Electric Company, Springfield, Ill.

Filed May 1, 1970, Ser. No. 33,723
Int. Cl. G06f 3/06, 3/10
U.S. Cl. 340—172.5 34 Claims

A data input preparation machine having keyboard means for use in entering data into buffer storage and processing such data to and from magnetic tape. The buffer storage includes a plurality of positions, each of which positions has storage means for both program and data information. Automatic verification means provide automatic verification of program entries at machine speeds, and memory and field backspace keys permit automatic backspacing to the previously keyed character of the most significant position of a field. The most significant position entries in the program section of buffer storage are also used for the LOF sequences for



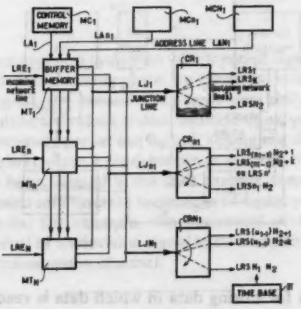
individual characters in such field, the transport being from the more significant positions of the field to the less significant positions of the field. Alphanumeric display means provide display of characters in a pattern identical to the character pattern on the keyboard; individual members for identifying the selected positions in memory, and alphanumeric program field identifiers all of which materially reduce operator time in the data processing operation. Novel register and memory arrangements using a reduced amount of equipment minimize the cycle process time for both program and data entry.

3,676,855

CONNECTING NETWORK ARRANGEMENT FOR TIME SWITCHING

Francois Tallegas, La Clarte Ploumanach, France, assignor to C.I.T.-Compagnie Industrielle des Telecommunications, Paris and Societe Lannionnaise D'Electronique, Lannion, France

Continuation-in-part of Ser. No. 692,144, Dec. 20, 1967, abandoned. This application Aug. 11, 1970, Ser. No. 62,935
Claims priority, application France, Dec. 23, 1966, 6688745
Int. Cl. H04m 3/00, 9/00
U.S. Cl. 340—172.5 6 Claims



The invention relates to a connecting network arrangement, in a system for the time switching of analog or digital data comprising one buffer memory per incoming network line, a distributor serving a certain number of outgoing network lines, a junction line serving each distributor, and a control memory being allocated to each junction line.

3,676,856

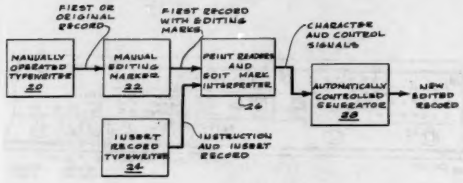
AUTOMATIC EDITING SYSTEM AND METHOD

Ron Manly, P.O. Box 201, Hawthorne, Calif.

Continuation of Ser. No. 275,415, April 24, 1963. This application Aug. 11, 1970, Ser. No. 63,020

Int. Cl. G06f 11/00; B41j 5/30

U.S. Cl. 340—172.5 59 Claims


FIRST OR ORIGINAL RECORD
FIRST RECORD WITH EDITING MARKS
MANUALLY OPERATED TYPEWRITER 20
MANUAL EDITING MARKER 22
PRINT READER AND EDIT MARK INTERPRETER
CHARACTER AND CONTROL SIGNALS
AUTOMATICALLY CONTROLLED SEQUENCER 28
USEW EDITED RECORD
INSERT RECORD TYPEWRITER 24
INSTRUCTION AND INSERT RECORD

This specification and drawings disclose how to avoid manually retyping or rekeyboarding textual material when revising or correcting the information contained in a record either while originally preparing the information or at a later date. The use of print readers or character recognition devices to accomplish this "editing" is disclosed, as well as editing using paper tape typewriters, display devices, and other means such as using editing instructions. Methods are also disclosed for automatically reformatting the information into lines after insertions, deletions, or other changes requiring shifting of the line layout of the information.

3,676,857

DATA STORAGE SYSTEMS

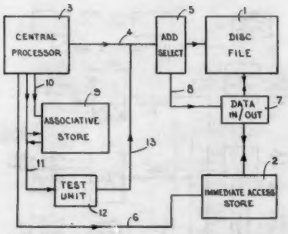
Howard Rodney Jackson, Hadfield, Hyde, England, assignor to International Computers Limited, Putney, London, England

Filed Aug. 12, 1970, Ser. No. 63,163

Claims priority, application Great Britain, Aug. 26, 1969, 42,337/69

Int. Cl. G06f 7/22

U.S. Cl. 340—172.5 6 Claims



A system for storing data in which data is read out of and written into a large, addressable, bulk store by means of an immediate access store. An associative store is initially loaded with address information and upon a signal from a central processor unit, the address information is read out of the associative store to a test unit which calculates a desired address in the bulk store. The address is then applied to an address selection circuit which allows data to be read out of or written into a desired storage location in the bulk store.

3,676,858

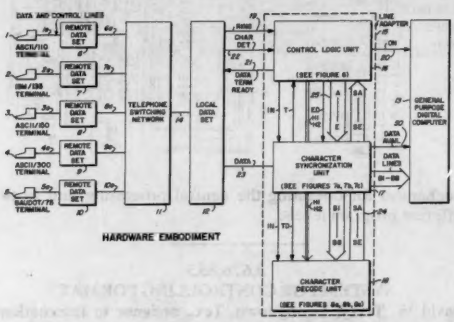
METHOD, APPARATUS AND COMPUTER PROGRAM FOR DETERMINING THE TRANSMISSION RATE AND CODING CONFIGURATION OF REMOTE TERMINALS

De Ver C. Finch, and James A. Kennedy, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc.

Filed Sept. 30, 1970, Ser. No. 76,726

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5 10 Claims



A method, an apparatus, and a computer program are disclosed for determining the transmission rate and coding configuration which characterize dissimilar remote terminals in a time-shared computer system. Electrical communication is established between an individual remote terminal and a line adapter unit, a single standard character is then transmitted from the remote terminal to the line adapter unit. The standard character is immediately analyzed either by hardware or by software to determine which one of a variety of transmission rates and code configurations characterize the particular terminal. In response to the analysis of the standard character, data communication is established between the remote terminal and the computer at the indicated transmission rate and in the indicated code.

3,676,859

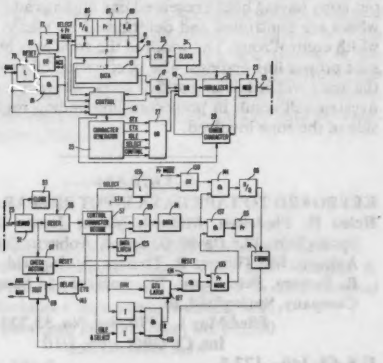
DATA COMMUNICATION SYSTEM INCORPORATING DEVICE SELECTION CONTROL

John T. Hollaway, Austin, Tex., and Carl O. Pingry, III, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,998

Int. Cl. G06f 3/04, 3/10; H04l 7/00

U.S. Cl. 340—172.5 6 Claims



A data communication system incorporating control means at the transmitting station for selecting which of several output

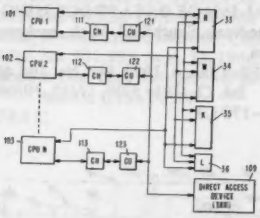
devices at the receiving station will record the transmitted data. Selection of the output device governs the data rate of the transmitted information. Error control means at the receiving station operates to signal the transmitting station to select a predesignated output device for recording messages previously received in error on another output device. The error control means is responsive both to errors induced by the communication channel and recording errors induced by the output device.

3,676,860

INTERACTIVE TIE-BREAKING SYSTEM

William W. Collier, and Ronald M. Smith, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,720
Int. Cl. G06f 9/18; G05b 19/22; G06r 15/16
U.S. Cl. 340—172.5 **10 Claims**



A multiple processor tie-breaking method separately and asynchronously used by each of any number of plural processors contending for a serially reusable resource (SRR). The contending processors independently and asynchronously interact in their use of the tie-breaking method to choose among themselves which processor will get the SRR.

The method uses a common group of registers (or fields) accessible to all contending processors. The method permits uncoordinated fetching and storing of bits in those registers. Only one bit at a time need be fetched or changed by any processor. In fact, the plural independent processors can concurrently fetch or store the same bit in the common group of registers without affecting the reliability of the method.

The priorities among processors dynamically change with every contention in a manner which gives each processor an equitable and equal chance of getting the SRR.

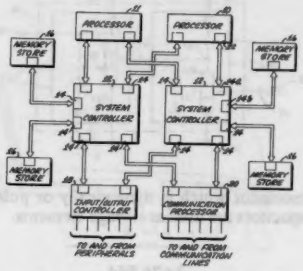
3,676,861

MULTIPLE MASK REGISTERS FOR SERVICING INTERRUPTS IN A MULTIPROCESSOR SYSTEM

Richard L. Ruth, Paradise Valley, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 30, 1970, Ser. No. 102,771
Int. Cl. G06f 13/00, 15/16
U.S. Cl. 340—172.5 **10 Claims**

Multiple mask registers located in a system communication controller enable each processor in a multiprocessing system to be a control processor and thereby select and execute interrupts on a priority basis. An executive program which supervises a processor loads its mask register with information according to the priority of the operation to be performed by the processor to control the answering of communication from itself and other modules of the processing system. The system controller includes an interrupt cells register associated with all of the mask registers. The interrupt cells store the existence of an interrupt request and are arranged in a predetermined



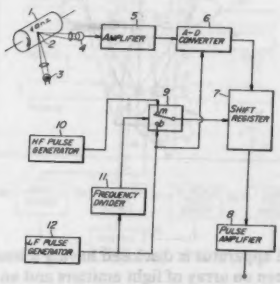
priority which is altered by each mask register for each control processor.

3,676,862

SIGNAL CONVERSION SYSTEM WITH TIME BASE COMPRESSION OF THE INPUT DATA

Kaoru Sasabe, Ikeda, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 740,348, June 26, 1968, abandoned. This application June 30, 1971, Ser. No. 158,514
Claims priority, application Japan, June 30, 1967, 42/42714
Int. Cl. G06f 5/06
U.S. Cl. 340—172.5 **3 Claims**



A signal conversion system in which coded signal pulses to be transmitted to a remote place, for example, pulses of coded facsimile signal, are stored in at least one shift register in synchronization with clock pulses and said signal pulses stored in the shift register are let out by quickening the shift cycle of the shift register when a predetermined number of said signal pulses have been entered in the shift register, thereby providing compressed and discrete sequences of signal pulses which can be put in, for example, the horizontal or the vertical flyback interval of a television signal to be transmitted through the latter's transmission channel.

3,676,863

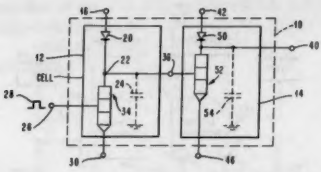
MONOLITHIC BIPOLAR DYNAMIC SHIFT REGISTER

Irving T. Ho, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 11, 1970, Ser. No. 18,583
Int. Cl. G11c 11/24, 19/00
U.S. Cl. 340—173 CA **9 Claims**

A monolithic memory including a plurality of intercon-

nected cells. Each cell includes a diode in series with bipolar device or transistor which is dynamically or pulse powered. Parasitic capacitors are used as storage elements.



3,676,864

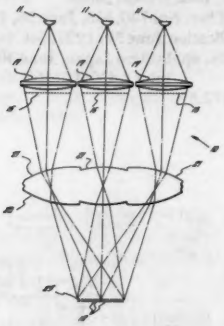
OPTICAL MEMORY APPARATUS

Douglas Raymond Maure, Santa Ana, and Barry Glenn Broome, Azusa, both of Calif., assignors to Optical Memory Systems, Inc., Santa Ana, Calif.

Filed June 29, 1970, Ser. No. 50,367

Int. Cl. G11c *13/04*

U.S. Cl. 340—173 LM **18 Claims**



An optical apparatus is disclosed having a lens system positioned between an array of light emitters and an array of light sensors for ensuring optimum energy transfer therebetween. In the apparatus, optical masks are positioned between the arrays of light emitters and light sensors with each mask having a bit location defined where each light transmission path between an emitter and a sensor intersects the mask. The lens system comprises an array of condenser lenses for concentrating the light energy from the emitters and projecting it through each mask to either a segmented primary lens or an image relay lens-combining lens combination, either of which functions to superimpose the images of all the masks onto a common image plane. The light sensors are positioned at the respective superimposed bit locations on the image plane for receiving the light energy projected thereon.

3,676,865

HIGH FREQUENCY SIGNAL MEMORY AND REGENERATOR

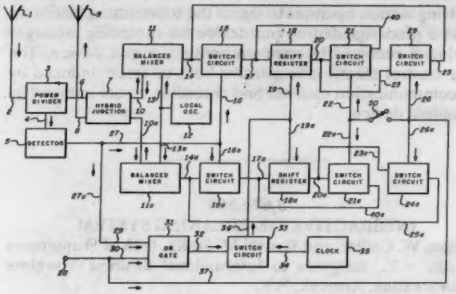
Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation

Filed Jan. 6, 1971, Ser. No. 104,370

Int. Cl. G11c *19/00, 21/00*

U.S. Cl. 340—173 RC **12 Claims**

Apparatus for storing high frequency pulse signals affording cycle-by-cycle storage of the carrier wave without degeneration over large periods of time permits undistorted regeneration of the original pulse signal on command.



3,676,866

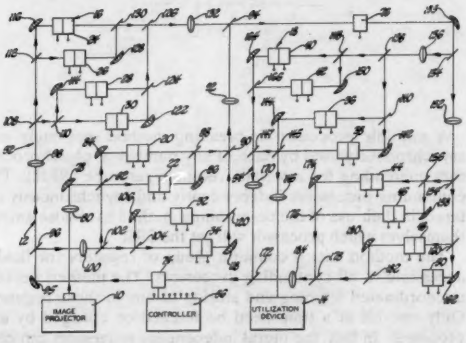
OPTICAL IMAGE DATA PROCESSING SYSTEM

Morris D. Freedman, Southfield, Mich., assignor to The Bendix Corporation

Filed Jan. 6, 1971, Ser. No. 104,406

Int. Cl. G11c *5/00, 11/32, 19/00*

U.S. Cl. 340—173 LT **16 Claims**



An optical image data processing system incorporating a processor that includes arrays of image storage devices each having write, store and read modes of operation and each being capable of inverting an image. The image storage devices are coupled by optical networks so that each receives the proper illumination and in a programmed sequence determined by a controller which determines the operating mode of the devices. One array of the devices is capable of shifting the optical image to facilitate analyzing the optical image for different information while another array can store this information.

3,676,867

USE OF MNALGE IN MAGNETIC STORAGE DEVICES

Donald Dingley Bacon, Somerset; Ethan Allen Nesbitt, Berkeley Heights; Richard Curry Sherwood, New Providence, and Jack Harry Wernick, Madison, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

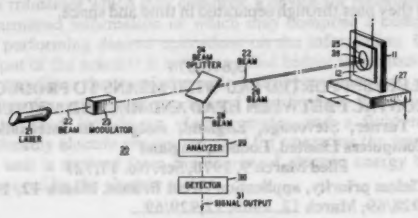
Filed Dec. 7, 1970, Ser. No. 95,707

Int. Cl. G11c *11/14, 11/42*

U.S. Cl. 340—174 YC **10 Claims**

It has been found that vapor deposition of the ferromagnetic material MnAlGe onto a substrate will give a thin film having

the easy direction of magnetization normal to the substrate. This unusual capability does not depend on epitaxial growth and, indeed, the preferred embodiment calls for the use of an



amorphous substrate. This inherent property of MnAlGe makes it useful for the class of magnetic devices operating on the principle of the reversal of the direction of magnetization of isolated regions for the purpose of information storage.

3,676,868

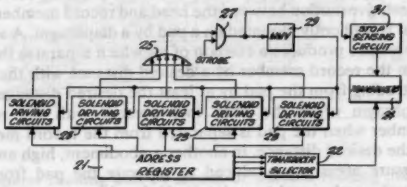
RANDOM ACCESS MAGNETIC STORAGE SYSTEM WITH MOVABLE TRANSDUCER

Eleuthere Poumakis, 50 Oak Court, Danville, Calif.

Continuation of Ser. No. 581,593, Sept. 23, 1966, abandoned. This application Dec. 10, 1969, Ser. No. 886,311

Int. Cl. G11b *21/08*

U.S. Cl. 340—174.1 C **15 Claims**



In a random access magnetic storage system, a set of transducers are positioned by means of a mechanical linkage in response to the positions of solenoid operated control means. The system generates a motion anticipation signal upon the registration of each new address in an address register if the new address requires movement of the set of transducers. The transducers are disabled until the transducers are positioned in their new position in response to a motion anticipation signal. If no motion anticipation signal is produced the transducing operations are permitted immediately after registration of the new address in the address register.

3,676,869

INTEGRATED LOW-LEVEL MAGNETIC DECODER

Jean-Pierre Lazzari, Seyssinet, and Igor Melnick, Grenoble, both of France, assignors to Commissariat A L'Energie Atomique, Paris and Compagnie International Pour L'Informatique, Lowvecennes, France

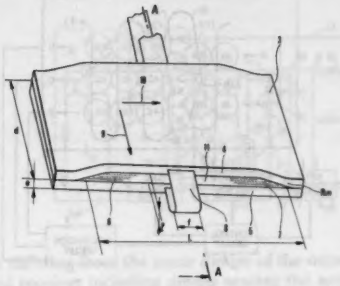
Filed Feb. 2, 1971, Ser. No. 111,856

Claims priority, application France, Feb. 13, 1970, 7005127

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 QA **3 Claims**

The decoder comprises a magnetic circuit in the form of a closed loop consisting of two parallel components which are formed of identical magnetic material having the same thickness and are joined together at their extremities, a primary winding and a secondary winding each housed within the interior and at one end of the loop, a control winding located between the primary and secondary windings and passed through the center of each component along the axis of easy magnetization of the magnetic circuit, the space formed



within the interior of the loop being filled with insulating material.

3,676,870

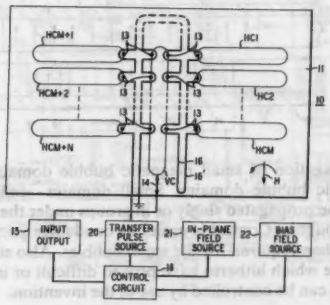
SINGLE WALL DOMAIN TRANSFER CIRCUIT

Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 13, 1971, Ser. No. 142,900

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **9 Claims**



Single wall domains are moved in a layer of a host magnetic material in response to magnetic poles generated in channel defining elements in response to a magnetic field reorienting in the plane of the layer in what is called a "field access" mode of operation. Domains are transferred herein between channels, so defined, by the in-plane field when the originating and receiving positions for a domain at each transfer location are encompassed by a conductor loop which, when pulsed, defines a magnetic fence about the positions.

3,676,871

DOMAIN LOGIC ARRANGEMENT

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

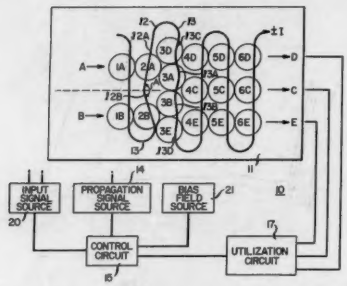
Filed May 21, 1971, Ser. No. 145,771

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 340—174 TF **8 Claims**

A single wall domain logic arrangement is defined by a serpentine propagation conductor in a layer of material in which single wall domains can be moved. The conductor, when ener-

gized, provides a drive field for domains in a number of channels between a plurality of inputs and outputs. The arrangement exhibits a signal at outputs determined by the pattern of domains at the inputs.

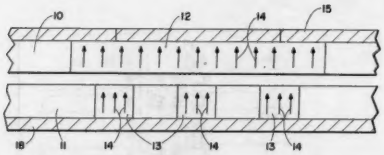


3,676,872

PROPAGATION OF MAGNETIC BUBBLE DOMAINS

Roger David Lock, Manotick, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed June 21, 1971, Ser. No. 155,043
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **14 Claims**



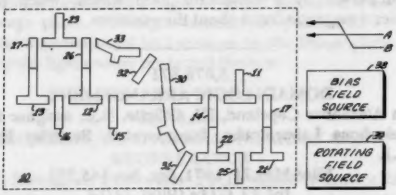
Propagation of small magnetic bubble domains by larger magnetic bubble domains. Small domains—called bubbles—can be propagated singly or in groups under the control of a larger bubble. Control is easier as conductor patterns can be larger than required for the small bubbles. Also small bubbles of a size which hitherto have proved difficult or impossible to control can be controlled by use of the invention.

3,676,873

MAGNETIC BUBBLE CROSSOVER CIRCUIT

Fred S. Lee, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 1, 1971, Ser. No. 194,375
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **6 Claims**



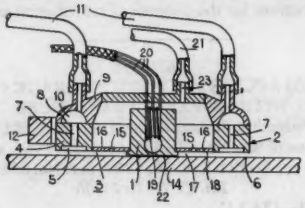
A magnetic bubble crossover circuit is provided in which the circuit paths are defined by an array of magnetic elements overlaying a magnetic bubble propagation substrate. A magnetic bias field provides bubble stability in the substrate and a rotating magnetic field causes the bubbles to propagate along the defined circuit paths. At the crossover point, in the array of magnetic elements, a common element is provided which has the property of steering the bubbles in respective paths so that they pass through separated in time and space.

3,676,874

FLUID SUPPORTED PAD WITH MEANS TO PRODUCE CONTACT BETWEEN HEAD AND RECORD MEDIUM

Ian Turner, Stevenage, England, assignor to International Computers Limited, London, England

Filed March 9, 1970, Ser. No. 17,727
Claims priority, application Great Britain, March 12, 1969, 12,928/69; March 12, 1969, 12,929/69
Int. Cl. G11b *5/60*
U.S. Cl. 340—174.1 E **4 Claims**



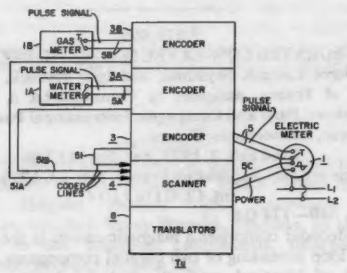
A magnetic transducing head assembly with a magnetic head being maintained in contact with a record member during relative motion between the head and record member. The head is resiliently mounted on a pad by a diaphragm. A source of pressure produces a cushion of air which separates the pad from the record member by a desired distance with the head protruding from the pad by at least the desired distance. The diaphragm urges the head into contact with the record member when the pad is separated from the record member by the desired distance. In another embodiment, high and low pressure areas are produced to separate the pad from the record member and to maintain the head in contact with the record member.

3,676,875

METHOD AND APPARATUS FOR TRANSMITTING INFORMATION IN METER READING

Rodney V. Adams, and Roger E. Medlin, both of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 10, 1970, Ser. No. 18,188
Int. Cl. G08c *19/28, 15/12*
U.S. Cl. 340—183 **7 Claims**



For transmitting information representing the readings of a plurality of meters a separate translating unit is provided. This unit includes a separate encoder for each of the meters which

converts analog information derived from the associated meter into digital information. The translating unit preferably includes a scanner for interrogating successively the outputs of the encoders. Information from the scanner is transmitted to a translator which may comprise a device for recording the transmitted information or which may comprise a computer for performing desired operations on the information. If the output of the scanner is to be modified before transmission to the translator the translating unit desirably may include an interface for performing the desired modification. If the meters to be read include an electric meter and a fluid meter preferably electric energy required for operating the translating unit is derived from the source of electric energy being measured by the electric meter.

3,676,876

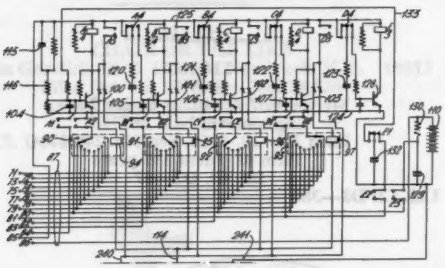
METER READING UNITS

Desmond Dransfield; Patrick Bass; Roy Ernest White, and Leslie Thomas Bracker, all of London, England, assignors to United Gas Industries Limited, London, England

Continuation of Ser. No. 688,759, Dec. 7, 1969, abandoned. This application Feb. 26, 1971, Ser. No. 119,364

Int. Cl. G08c *09/00;* **G01r** *17/06*

U.S. Cl. 340—188 **7 Claims**



A meter reading unit by means of which a reading may be made without sight of a meter includes a plurality of indicators, one corresponding to each digit of the meter reading, a switch associated with each indicator, and electrical connections provided for connection to switches at a meter which are set according to the meter reading whereby particular ones of the electrical connections are made according to the setting of the switches at the meter, and means to set the indicators according to the setting of the switches at the meter.

3,676,877

FIRE ALARM SYSTEM WITH FIRE ZONE LOCATOR USING ZENER DIODE VOLTAGE MONITORING

Tetsuo Kobayashi, Tokyo, Japan, assignor to Mittan Company Limited, Tokyo, Japan

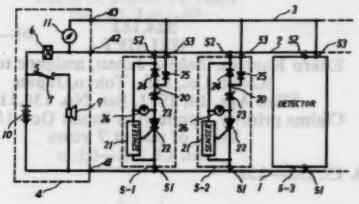
Filed April 7, 1971, Ser. No. 132,039

Claims priority, application Japan, April 22, 1970, 45/33843; Aug. 22, 1970, 45/73142; April 18, 1970, 45/32669

Int. Cl. G08b *17/06*

U.S. Cl. 340—227 R **4 Claims**

A fire alarm system having a plurality of detectors operably to actuate a single receiver to sound an alarm upon the presence of fire, said detectors each having a zener diode interposed in the conduction path so that at least part of the current flows through the zener diode, each zener diode having a



voltage differing from the zener diodes of the other detectors and said receiver including means sensing the specific zener diode voltage of an actuated detector in order to determine the detector that has been actuated.

3,676,878

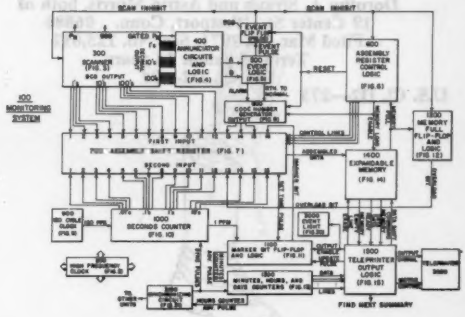
VARIABLE MONITORING SYSTEM

Kenneth C. Linder, Arlington Heights, Ill., assignor to The Riley Company, Skokie, Ill.

Filed Oct. 14, 1968, Ser. No. 767,456

Int. Cl. G08b *26/00*

U.S. Cl. 340—408 **13 Claims**

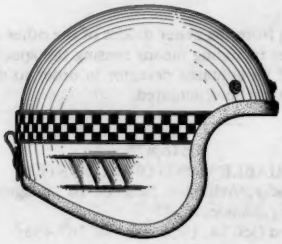


An alarm system for monitoring a large number of variables and for producing a permanent printed record of the exact times when variables changed their state. A scanner counter periodically scans a plurality of annunciator circuits, each of which is associated with a variable. Whenever the scanner locates an annunciator circuit whose state indicates that the associated variable has changed its state since the last scan, the number of the associated variable is retrieved from the scanner counter and the time in seconds and fractions of a second is retrieved from a counter clock. This data and other data is assembled and fed serially into an expandable shift register memory. A teleprinter output logic circuit then retrieves the data from the other end of the expandable memory and feeds it slowly to a teleprinter, along with the time in minutes and hours, and the date in days.

DESIGNS

JULY 11, 1972

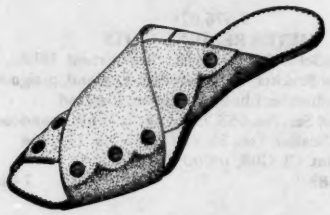
224,182
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kakoh Co., Ltd., Tokyo, Japan
Filed Apr. 14, 1971, Ser. No. 134,117
Claims priority, application Japan Oct. 15, 1970
Term of patent 7 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



224,183
BOOT
Dorothy A. Straub and Astrid Morris, both of 19 Center St., Westport, Conn. 06880
Filed Mar. 16, 1971, Ser. No. 125,012
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—273

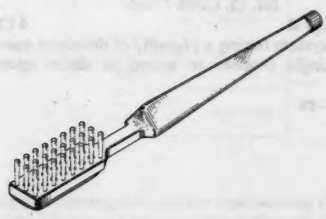
224,184
BOOT
Dorothy A. Straub and Astrid Morris, both of 19 Center St., Westport, Conn. 06880
Filed Mar. 16, 1971, Ser. No. 125,014
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—273

224,185
LADY'S SLIPPER OR SIMILAR ARTICLE
Eugenia Schenker, 147—19 Sanford Ave., Flushing, N.Y. 11355
Filed Dec. 18, 1970, Ser. No. 26,561
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—283



224,186
SASH
Melvin V. Zakarin, 23 Ogden Lane, Englishtown, N.J. 07726
Filed July 20, 1970, Ser. No. 24,017
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—385

224,187
HEAD AND HANDLE FOR TOOTHBRUSH OR THE LIKE
McClellan J. Klepper, R.R. 1, Higginsville, Mo. 64037
Filed Nov. 27, 1970, Ser. No. 26,191
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



224,188
CHAIR
Gardner Leaver, New York, N.Y., assignor to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of design application Ser. No. 16,351, Mar. 20, 1969. This application Sept. 4, 1970, Ser. No. 24,841
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—20

224,189
CHAIR OR THE LIKE
Marvin Gorelick, 60 E. 12th St., New York, N.Y. 10013
Filed Oct. 16, 1970, Ser. No. 25,529
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—20

224,190
CHAIR
Alex Strässle, CH–9533, Kirchberg, Switzerland
Filed Oct. 15, 1970, Ser. No. 25,515
Claims priority, application Great Britain July 17, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—65

224,191
CHAIR OR SIMILAR ARTICLE
Alex Strässle, CH–9533, Kirchberg, Switzerland
Filed Oct. 15, 1970, Ser. No. 25,513
Claims priority, application Austria Apr. 27, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66

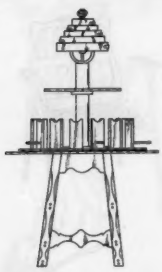
224,192
CHAIR
Raymond Grosfillex, Arbent, France, assignor to Societe Grosfillex, Societe a Responsabilite Limitee, Arbent, France
Filed May 11, 1970, Ser. No. 22,908
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—70

224,193
CHAIR
Raymond Grosfillex, Arbent, France, assignor to Societe Grosfillex, Societe a Responsabilite Limitee, Arbent, France
Filed May 11, 1970, Ser. No. 22,910
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—70

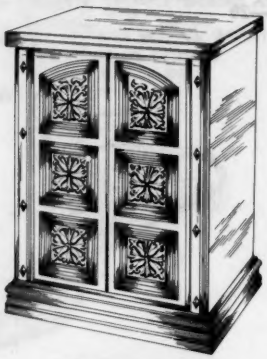
224,194
SEPARABLE LAP TRAY TABLE UNIT
Ralph H. Logan, High Point, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed June 8, 1970, Ser. No. 23,366
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—138

224,195
MOBILE COCKTAIL BAR
Vincent J. Intorcio, 7123 Mentor Ave. (Willoughby P.O.), Mentor, Ohio 44094
Filed Sept. 9, 1970, Ser. No. 24,896
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144

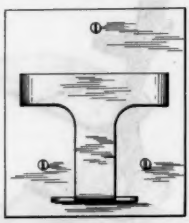
224,196
BOOKCASE
Ransom Reaves, 679 E. McKellar, Memphis, Tenn. 38106
Filed June 1, 1970, Ser. No. 23,237
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—148



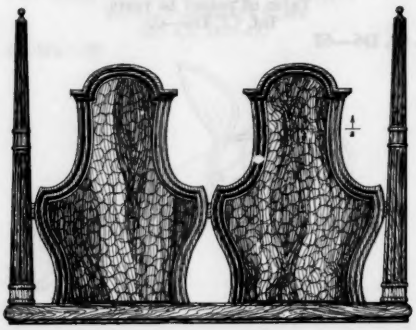
224,197
SEWING MACHINE CABINET
Howard Peters, Dyersburg, Tenn., assignor to U.S. Industries, Inc., New York, N.Y.
Filed July 13, 1970, Ser. No. 23,913
Term of patent 3½ years
Int. Cl. D6—*04*
U.S. Cl. D6—181



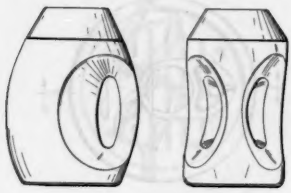
224,198
MAGAZINE RACK
Raymond I. Hastings, Ridgefield, Conn., assignor to Professional Sports Marketing, Inc., New York, N.Y.
Filed Sept. 4, 1970, Ser. No. 24,840
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—184



224,199
HEADBOARD FOR A BEDSTEAD OR SIMILAR ARTICLE
Huey T. Keller, High Point, N.C., assignor to Empire Furniture Corporation, Johnson City, Tenn.
Filed Aug. 10, 1970, Ser. No. 24,401
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—198

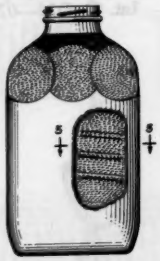


224,200
COMBINED JUG AND CLOSURE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 29, 1971, Ser. No. 138,848
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—41



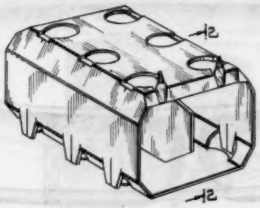
224,201
BOTTLE OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 28, 1971, Ser. No. 157,794
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42

224,202
BOTTLE
Joseph Boden, Chicago, Ill., assignor to Boden Products, Inc., Franklin Park, Ill.
Filed Mar. 29, 1971, Ser. No. 129,288
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44

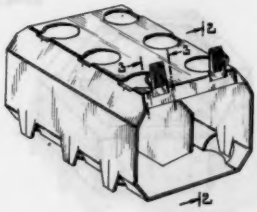


224,203
BOTTLE
Robert J. Donoghue, 900 Windsor Ave., Windsor, Conn. 06095
Filed Sept. 8, 1970, Ser. No. 24,875
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—131

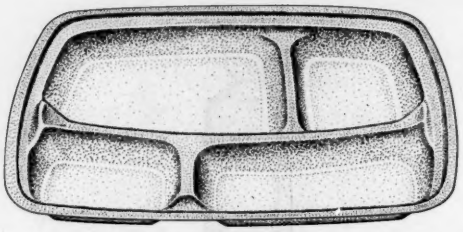
224,204
BOTTLE CARTON
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc.
Continuation-in-part of design application Ser. No. 20,360, Dec. 4, 1969. This application Oct. 8, 1970, Ser. No. 25,377
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—176



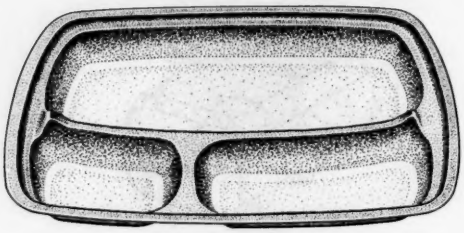
224,205
BOTTLE CARTON
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc.
Continuation-in-part of design application Ser. No. 20,471, Dec. 3, 1969. This application Oct. 8, 1970, Ser. No. 25,907
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—176



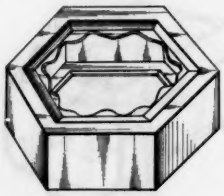
224,206
COMPARTMENTED TRAY
Steven J. Cyr and Mark W. Whelan, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed Aug. 28, 1970, Ser. No. 24,753
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



224,207
COMPARTMENTED TRAY
Steve Cyr and Mark Whelan, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed July 28, 1970, Ser. No. 24,188
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



224,208
DISPLAY BOX
Joseph Kuchar, Montreal, Quebec, Canada, assignor to Record Chemical Co. Inc., Montreal, Quebec, Canada
Filed July 13, 1970, Ser. No. 23,938
Claims priority, application Canada Apr. 7, 1970
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242



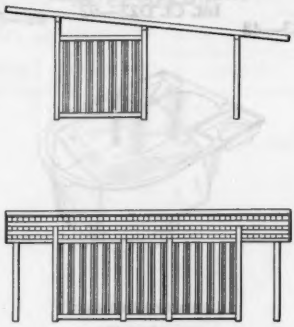
224,209
CONTAINER END
Christian Frederick Kinkel, Arlington Heights, and Burton Frank Pillnik, Cary, Ill., assignors to American Can Company, Greenwich, Conn.
Filed May 7, 1971, Ser. No. 141,456
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—255

224,210
BOTTLE CAP
Andrew Apicella, 42—22 Ketcham St., Elmhurst, N.Y. 11373
Filed Apr. 5, 1971, Ser. No. 131,570
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—284

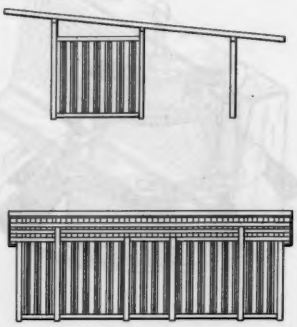
224,211
COMPONENT FOR GRILL WORKS, RAILINGS, COLUMNS AND THE LIKE
Ellis de Loy Larson, 225 E. State Road, Pleasant Grove, Utah 84062
Filed Feb. 18, 1971, Ser. No. 116,734
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1

224,212
COMPONENT FOR RAILINGS, GRILL WORKS, COLUMNS AND THE LIKE
Ellis De Loy Larson, 225 E. State Road, Pleasant Grove, Utah 84062
Filed Mar. 1, 1971, Ser. No. 120,004
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1

224,213
SHELTER
Robert S. Wormser, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Mar. 18, 1971, Ser. No. 125,904
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

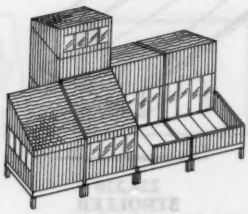


224,214
CAMPING SHELTER
Robert S. Wormser, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Mar. 18, 1971, Ser. No. 125,906
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,215
VENDING STAND
Gary L. Baldwin, Oklahoma City, Okla., assignor to SBI Incorporated, Phoenix, Ariz.
Filed May 12, 1971, Ser. No. 142,861
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

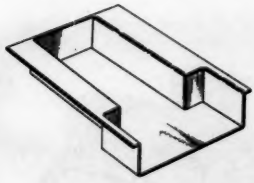
224,216
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vanderbilt Ave., Brooklyn, N.Y. 11205
Filed May 26, 1971, Ser. No. 147,299
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,217
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vanderbilt Ave., Brooklyn, N.Y. 11205
Filed May 26, 1971, Ser. No. 147,300
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

224,218
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vanderbilt Ave., Brooklyn, N.Y. 11205
Filed May 26, 1971, Ser. No. 147,302
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

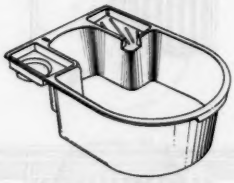
224,219
LINER FOR A PICKUP TRUCK
Jack V. Ritter, Puyallup, Wash., assignor to Research Marketing, Inc.
Filed Apr. 27, 1970, Ser. No. 22,676
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



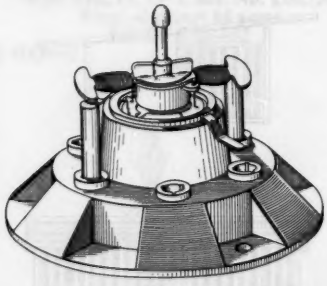
224,220
STROLLER
James Alan Boultbee, 39 Dickson Ave., Artarmon, New South Wales, Australia
Filed Aug. 3, 1970, Ser. No. 24,272
Claims priority, application Australia Feb. 5, 1970
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D14—14

224,221
VEHICLE SPOKE WHEEL
Frank A. De Puydt and Eugene P. Conradi, Des Moines, Iowa, assignors to Dico Company, Inc., Des Moines, Iowa
Filed Dec. 14, 1970, Ser. No. 26,480
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30

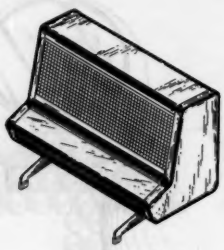
224,222
WASH BASIN
Delmas E. Collins, West Lafayette, Ohio, assignor to Jones-Zylon, Inc., West Lafayette, Ohio
Filed Oct. 30, 1970, Ser. No. 25,753
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



224,223
ELECTRICAL MEASUREMENT DEMONSTRATOR OR SIMILAR ARTICLE
David E. Munn, Framingham, and Robert Maddestra, Hyde Park, Mass., assignors to Damon Corporation, Needham, Mass.
Filed Mar. 29, 1971, Ser. No. 129,295
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1

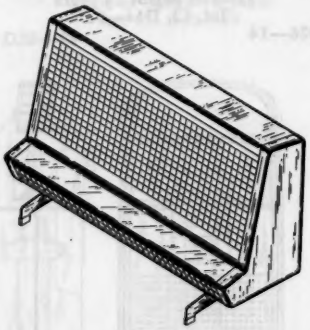


224,224
HEATER
Joseph R. Mango, Midlothian, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 21,186
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122



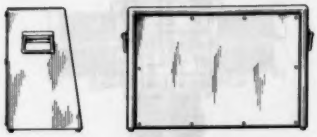
224,225
HANDLE FOR PLUMBING FIXTURE
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 21, 1970, Ser. No. 26,593
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—28

224,226
HEATER
Joseph R. Mango, Midlothian, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 21,187
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122

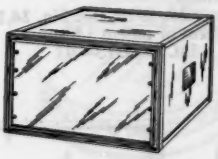


224,227
HEATER
Joseph R. Mango, Midlothian, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 21,210
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122

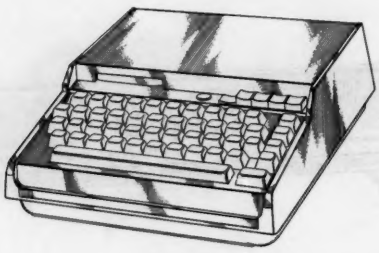
224,228
FRACTIONAL HORSEPOWER DC CONTROLLER
Daniel M. Flynn, Hampden, Stanley J. Bandoski, Jr., Springfield, and William R. Clow, Agawam, Mass., assignors to Hampden Engineering Company, East Longmeadow, Mass.
Filed July 27, 1970, Ser. No. 24,154
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



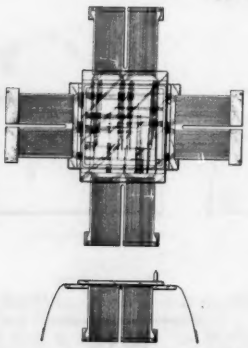
224,229
HOUSING FOR ELECTRONIC EQUIPMENT
Leon Gordon Miller, Shaker Heights, Ohio, assignor to Bud Radio, Incorporated, Willoughby, Ohio
Filed Aug. 28, 1970, Ser. No. 24,748
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



224,230
DATA INPUT TERMINAL
James W. Kelso, Pacific Palisades, Calif., assignor to MSI Data Corporation, Montclair, Calif.
Filed Dec. 7, 1970, Ser. No. 26,339
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

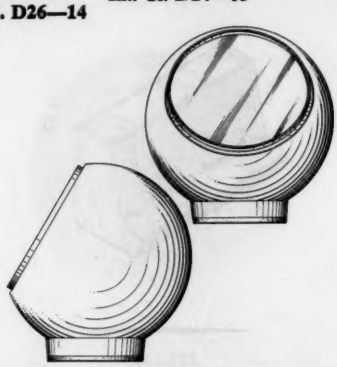


224,231
COMBINED LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL AND CONNECTING CABLES
Larry J. Schmersal and Gerald E. Wojcik, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Apr. 23, 1971, Ser. No. 137,097
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

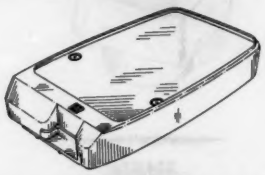


224,232
FRACTIONAL HORSEPOWER AC CONTROLLER
Daniel M. Flynn, Hampden, Stanley J. Bandoski, Jr., Springfield, and William R. Clow, Agawam, Mass., assignors to Hampden Engineering Company, East Longmeadow, Mass.
Filed July 28, 1970, Ser. No. 24,173
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

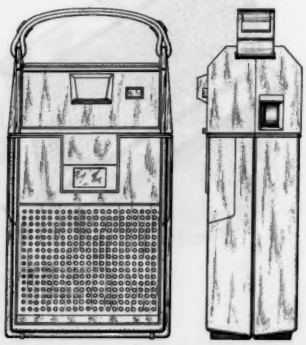
224,233
HOUSING FOR AN ELECTRONIC COMMUNICATION APPARATUS
Ryuzo Fujita, Suidobashi Bldg., 4–4, 1-chome, Hongo, Bunkyo-ku, Tokyo, Japan
Filed Feb. 3, 1971, Ser. No. 112,521
Claims priority, application Japan Aug. 3, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



224,234
TELEPHONE BASE WITH UNIT FOR READING AND STORING DATA FROM CODED CARDS
John George Laycock Rhodes, Leatherhead, England, assignor to Telephone Manufacturing Company Limited, London, England
Filed Sept. 9, 1970, Ser. No. 25,150
Claims priority, application Great Britain Mar. 10, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



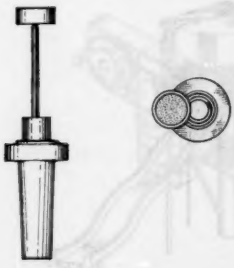
224,235
PORTABLE TAPE RECORDER
Andrew Kainass, Syracuse, N.Y., assignor to General Electric Company
Filed June 23, 1971, Ser. No. 156,172
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



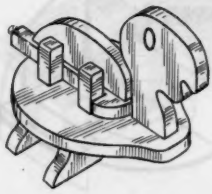
224,236
NOVELTY TREE
Dominic F. Notarianni, 5179 Bronson Drive, Lewiston, N.Y. 14092
Filed May 22, 1970, Ser. No. 23,104
Term of patent 14 years
Int. Cl. D11—*04*
U.S. Cl. D29—1

224,237
DECORATIVE REFLECTOR FOR A CHRISTMAS LIGHT
Terry Hermanson, New York, N.Y., assignor to Mr. Christmas Incorporated, New York, N.Y.
Filed June 16, 1971, Ser. No. 153,930
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1

224,238
AQUARIUM AERATOR
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed Dec. 11, 1970, Ser. No. 26,415
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—12



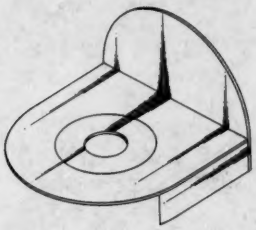
224,239
THREE-DIMENSIONAL TURTLE FIGURE
Harry Meth and Susan Lake, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Oct. 26, 1970, Ser. No. 25,665
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2



224,240
FIGURE TOY OR THE LIKE
Sidney Bass, Los Angeles, Armando M. Baeza, Whittier, and Joyce H. Christopher, Long Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 8, 1970, Ser. No. 26,358
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4

224,241
INFLATABLE WADING POOL
Bernard Tytel, New York, N.Y., assignor to Award International, Inc., Bergen, N.J.
Filed Sept. 21, 1970, Ser. No. 25,119
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

224,242
PITCHING GAME TARGET
Thirl W. Waddle, Fort Worth, and Jackie D. Wood and Verner L. Jackson, Weatherford, Tex.; said Wood and said Jackson assignors to J. Lloyd Patton, Fort Worth, Tex.
Filed Dec. 18, 1970, Ser. No. 26,565
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

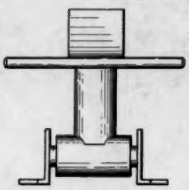


224,243
PLAYGROUND APPARATUS OR THE LIKE
Donal D. Hock, Herrin, and Robert E. Feigenbaum and Erwin N. Korte, Carbondale, Ill., and William R. Baynes, Palos Verdes Peninsula, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1971, Ser. No. 104,824
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

224,244
SWING SEAT OR THE LIKE
Donal D. Hock, Herrin, Ill., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1971, Ser. No. 104,826
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

224,245
COMBINED PLAYGROUND CLIMBER AND SUPPORT FOR SWINGS OR THE LIKE
Donal D. Hock, Herrin, Ill., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1971, Ser. No. 104,828
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

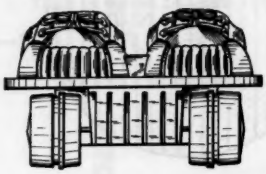
224,246
PLAYGROUND EQUIPMENT SUPPORT
Ronald L. Ewers, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Mar. 18, 1971, Ser. No. 125,903
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



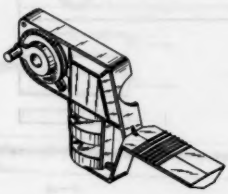
224,247
COMBINED PLAYGROUND TREE HOUSE AND SLIDE
Grant E. Jamison, Los Angeles, Calif., assignor to Jamison, Inc., Los Angeles, Calif.
Filed Apr. 29, 1971, Ser. No. 138,862
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

224,248
PASSENGER CARRYING TOW KITE
William Edward Bennett, 12001 Gerald Ave., Granada Hills, Calif. 91344
Filed Sept. 24, 1969, Ser. No. 19,272
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

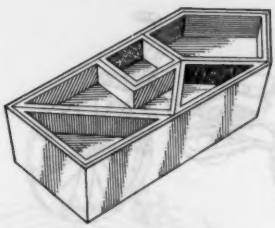
224,249
FREELY ROLLING SUPPORT FOR FIGURE TOY OR THE LIKE
Sidney Bass, Los Angeles, Armando M. Baeza, Whittier, Joyce H. Christopher, Long Beach, and Frank J. Kuchta, Redondo Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 7, 1970, Ser. No. 26,319
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,250
LAUNCHER FOR TOY AIRCRAFT OR THE LIKE
Philip W. Crain, Redondo Beach, Floyd E. Schlau, Palos Verdes Estates, and Paul Tam, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 22, 1971, Ser. No. 109,076
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



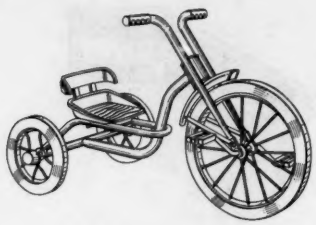
224,251
THREE DIMENSIONAL PUZZLE
Wilbur H. Adams, 66 E. 83rd St., New York, N.Y. 10028
Filed Aug. 7, 1970, Ser. No. 24,361
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



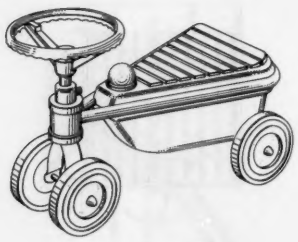
224,252
TOY JAIL PLAYHOUSE
Larry G. Clark, 5532 Hollister Drive, Indianapolis, Ind. 46224
Filed Aug. 21, 1970, Ser. No. 24,622
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

224,253
TOY TOWER FOR SIMULATED FLIGHT CONTROL
Robert B. Lovejoy, Hermosa Beach, Bruce Ashby, Torrance, Denis V. Bosley, Palos Verdes Peninsula, and Raymond J. Douglas, Lomita, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 2, 1971, Ser. No. 130,860
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

224,254
TRICYCLE
Loran R. Hill, Olney, Ill., assignor to AMF Incorporated
Filed Apr. 20, 1971, Ser. No. 135,828
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D34—15



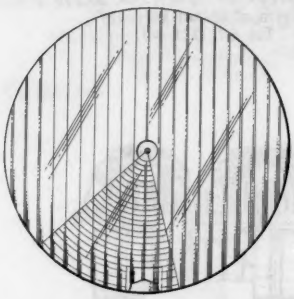
224,255
CHILD'S COASTER VEHICLE
Stanley M. Novak, Jr., Olney, Ill., assignor to AMF Incorporated
Filed May 17, 1971, Ser. No. 144,372
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



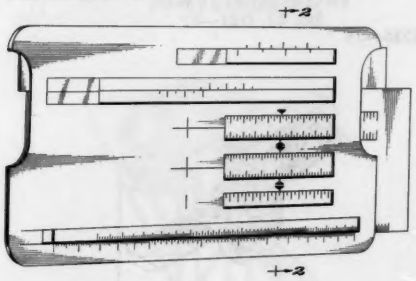
224,256
CHAFING DISH FOR FONDUE OR THE LIKE
Morton Ocuin, New York, N.Y., assignor to The Gailstyn Company, Inc.
Filed Nov. 9, 1970, Ser. No. 25,906
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—15

224,257
BRACELET
Robert M. Lee, 16 E. 53rd St., New York, N.Y. 10022
Filed Oct. 28, 1970, Ser. No. 25,702
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—7

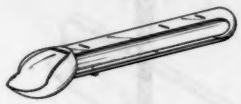
224,258
WARNING LENS
Robert I. Nagel, Skokie, Ill., assignor to R. E. Dietz Company, Syracuse, N.Y.
Filed Sept. 15, 1970, Ser. No. 24,998
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



224,259
SLIDE RULE CALCULATOR
Cesare A. Raimondi, Los Angeles, Calif. (10050 Debra Ave., Sepulveda, Calif. 91343)
Filed Oct. 30, 1970, Ser. No. 25,725
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6

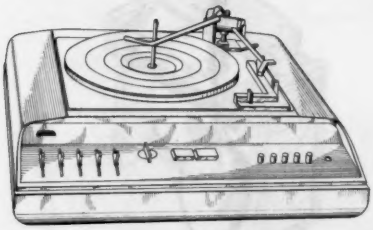


224,260
MEDICAMENT DISPENSER SPOON
Bruce Zeitzer and Louis Brodosky, Parlin, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed May 28, 1971, Ser. No. 148,302
Term of patent 14 years
Int. Cl. D7—*03*; D28—*01*; D24—*02*
U.S. Cl. D52—1

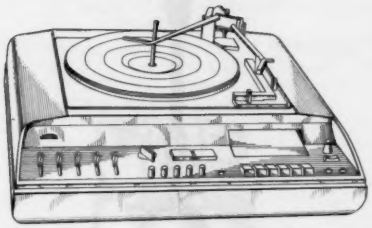


224,261
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 10, 1971, Ser. No. 142,092
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

224,262
PHONOGRAPH
Carl Yurdin, Port Washington, N.Y., assignor to Harman-Kardon, Incorporated, Plainview, Long Island, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,788
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



224,263
COMBINED RADIO-PHONOGRAPH AND TAPE PLAYER OR SIMILAR ARTICLE
Carl Yurdin, Port Washington, N.Y., assignor to Harman-Kardon, Incorporated, Plainview, Long Island, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,789
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



224,264
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Feb. 4, 1971, Ser. No. 112,840
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

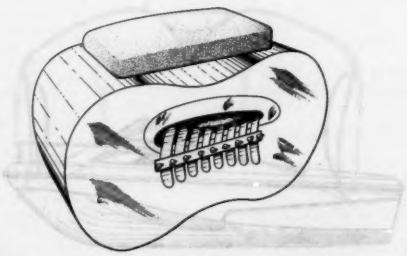
224,265
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 12, 1971, Ser. No. 133,482
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

224,266
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 6, 1971, Ser. No. 141,066
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

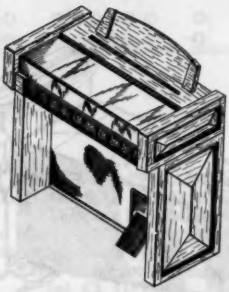
224,267
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 10, 1971, Ser. No. 142,093
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

224,268
HARMONICA
William De Warel Switzer, Jr., Berkeley, Calif. (General Delivery, Woodacre, Calif. 94973)
Filed Aug. 24, 1970, Ser. No. 24,658
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D56—1

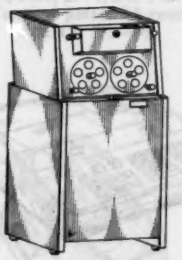
224,269
COMBINED SEAT AND VIBRATABLE REED MUSICAL INSTRUMENT
Joseph Raymond Esquina, 11442 Angell St., Norwalk, Calif. 90650, and James Daryl Addy, 2403 Seville St., Anaheim, Calif. 92806
Filed Jan. 7, 1971, Ser. No. 104,840
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



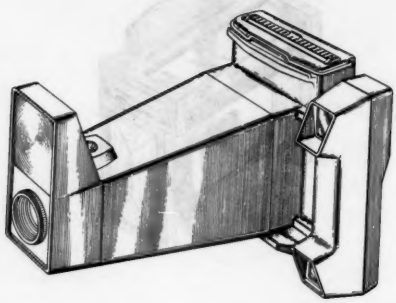
224,270
CABINET FOR KEYBOARD INSTRUMENT OR THE LIKE
Salvatore Merendino, Pasadena, Edward Barczak, Los Angeles, and Adolph D. Lambach, Fountain Valley, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 11, 1971, Ser. No. 105,793
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2



224,271
PHOTOGRAPHIC FILM NOTCHER
Francesco Milani, Bellinzona, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland
Filed Nov. 23, 1970, Ser. No. 26,142
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



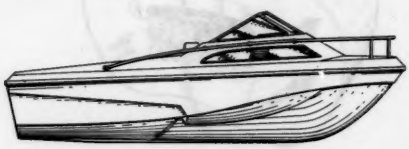
224,272
PHOTOGRAPHIC CAMERA OR SIMILAR ARTICLE
James M. Conner, Mamaroneck, N.Y., and Richard H. Davison, Sudbury, Milton S. Dietz, Lexington, and Bruce K. Johnson, Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of design application Ser. No. 23,741, June 23, 1970. This application Apr. 15, 1971, Ser. No. 134,522
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



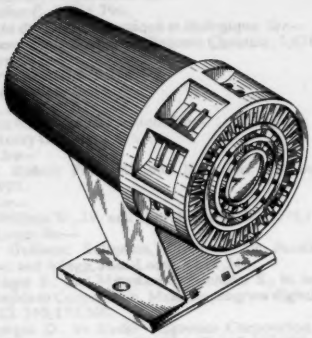
224,273
CALCULATING MACHINE
Mititaka Yamamoto, Kyoto, Koichi Yaida, Osaka, and Hisashi Maeda, Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-shi, Kyoto-fu, Japan
Filed Jan. 19, 1971, Ser. No. 107,872
Claims priority, application Japan July 21, 1970
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

224,274
FONT OF TYPE
William Beck, 57B Troy Hills Village, Rte. 46, Parsippany, N.J. 07054
Filed Oct. 26, 1970, Ser. No. 25,636
Term of patent 3½ years
Int. Cl. D18—*04*
U.S. Cl. D64—12

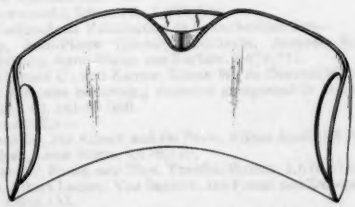
224,275
POWER BOAT
Richard C. Cole, 19701 Whispering Pines Road, Miami, Fla. 33157
Filed Dec. 21, 1970, Ser. No. 26,606
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



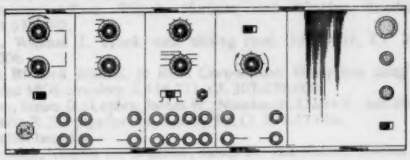
224,276
SIREN
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Feb. 3, 1971, Ser. No. 113,518
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1



224,277
FACE MASK
Howard J. Venaleck, 162 Marble Drive, Rochester, N.Y. 14615
Filed Sept. 28, 1970, Ser. No. 25,220
Term of patent 14 years
Int. Cl. D24—*05;* D2—*03*
U.S. Cl. D83—1

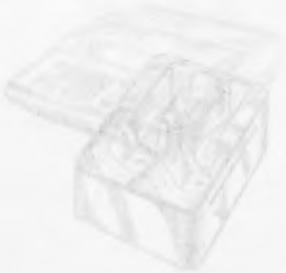


224,278
ELECTRONIC ASSEMBLY FOR BIOLOGICAL STUDIES
Jan A. van den Broek, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.
Filed Oct. 2, 1970, Ser. No. 25,310
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1



224,279
SMOKING APPLIANCE
Jesse L. Nubla, P.O. Box 2556, Manila, Philippine Republic
Filed Nov. 17, 1970, Ser. No. 26,043
Claims priority, application Philippines July 16, 1970
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8

224,280
SNOWMOBILE ACCESSORY CARRIER
Russell L. Price, 3275 Kenwood Ave., Minneapolis, Minn. 55416
Filed Sept. 30, 1970, Ser. No. 25,276
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & T Development Corporation: *See—*
Avril, Arthur C., 3,675,790.

A. E. C. Societe de Chimie Organique et Biologique: *See—*
Redel, Joseph; and Boch, Jean Baptiste Christian, 3,676,499.

A/S Selvaagbygg: *See—*
Nustad, Per Eirik, 3,675,368.

AB Cold-Bound Pellets: *See—*
Kihlstedt, Per G., 3,676,104.

A.B. Electronic Components Limited: *See—*
Howitt, Henry Gazeley, 3,676,826.

Abbott, Earl: *See—*
Lickliter, Robert Paul; Abbott, Earl; and Reeves, John F., 3,675,957.

Abcor, Inc.: *See—*
Cooper, William W., IV; and Shea, Edward M., 3,676,193.

Abegg, Jean-Louis: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, 3,676,546.

Abernathy, Roger E.; and Mitrofanoff, Nicholas S., to International Business Machines Corporation. Multiple program digital computer. 3,676,852, Cl. 340-172.500.

Abitboul, Georges D., to Audio Magnetics Corporation. Vibration processing of magnetic tape. 3,676,216, Cl. 117-237.000.

Aboytes, Peter, to Huber, J. M., Corporation. Bonding metals to elastomer systems. 3,676,256, Cl. 156-306.000.

Abrams, Andrew M., to Union Camp Corporation. Block structure with a reinforcing filler. 3,675,345, Cl. 35-69.000.

Abu Aktiebolag: *See—*
Borgstrom, Gote Ingvar, 3,675,847.

Acushnet Company: *See—*
Le Goff, Loman H., 3,675,698.

Adair, Robert S., to United States of America, Navy. Vertical reference pendulum. 3,675,549, Cl. 95-1.100.

Adams, Ladd M., to Balon Corporation. Valve actuator. 3,675,420, Cl. 60-51.000.

Adams, Rodney V.; and Medlin, Roger E., to Westinghouse Electric Corporation. Method and apparatus for transmitting information in meter reading. 3,676,875, Cl. 340-183.000.

Adams, Whitney B., to Scott Paper Company. Method for forming pyrolyzed structures. 3,676,173, Cl. 117-21.

Addressograph-Multigraph Corporation: *See—*
Botkin, Carl, 3,676,001.

ADM Tronics: *See—*
Di Mino, Alfonson, 3,676,633.

Aerojet-General Corporation: *See—*
Lucas, JamesM., 3,676,232.

Aeronautics and Space Administration with respect: *See—*
Paine, T. O., Administrator of the National; Aeronautics and Space Administration with respect; to an invention of; Moser, Billy G.; and Landel, Robert F., 3,675,712.

Aeronca, Inc.: *See—*
Page, George A.; Rathbun, Robert R.; and Kramer, Bruce E., 3,676,635.

Aerospace America, Inc.: *See—*
Kontranowski, Edward S., 3,675,730.

Agence Nationale de Valorisation de la Recherche: *See—*
Loup, Jean-Pierre Olivier; Gutknecht, Jacques Emile; and Anthony, Anne-Marie, nee Barbier, 3,676,771.

Agens, Maynard C.; and Kantor, Simon W., to General Electric Company. Laminates containing stannous compound in bonding resin. 3,676,285, Cl. 161-93.000.

Agfa-Gevaert: *See—*
Carpentier, Jan Albert; and De Pauw, Alfons Jozef, 3,676,142.
De Haes, Louis Maria, 3,676,125.
Depoorter, Henri; and Ghys, Theofiel Hubert, 3,676,119.
Poot, Albert Lucien; Van Besauw, Jan Frans; and Depoorter, Henri, 3,676,133.
Poot, Albert Lucien; and Depoorter, Henri, 3,676,138.
Poot, Albert Lucien; and Depoorter, Henri, 3,676,140.
Willems, Jozef Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, 3,676,131.

Agfa-Gevaert Aktiengesellschaft: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Hellmig, Ehrhard, 3,676,122.
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, 3,676,143.
Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, 3,676,759.
Schulz, Gunter; Himmelmann, Wolfgang; and Randolph, August, 3,676,144.
Wilsch, Herbert; and Muller, Hermann, 3,675,996.
Winkler, Alfred; Wilsch, Herbert; and Winkler, Friedrich, 3,675,992.

Ahrens, William J. Truck with sliding roof. 3,675,967, Cl. 296-137.00b.

Ahrons, Richard Wilfred, to RCA Corporation. Delay line using integrated MOS circuitry. 3,676,711, Cl. 307-293.000.

Aikinson, James D.; Lepley, James W.; Nussbaum, Claire E.; and Stolzfus, John E. Fill pipe for silo. 3,675,796, Cl. 214-17.00c.

Air-Shields, Inc.: *See—*
Crowley, Charles L.; Grosholz, James R.; and Hutter, Charles G., III, 3,675,653.

Airco, Inc.: *See—*
Ormand, Frederick T.; and Auger, Huey V., 3,676,563.

Aisenberg, Sol; and Dodge, James B., to Whittaker Corporation, mesne. Extrusion system. 3,675,451, Cl. 72-20.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Hirozawa, Koichiro, 3,675,512.

Ajax Hardware Manufacturing Corporation: *See—*
Holmes, Frank; Arias, Henry, Jr.; and Read, George, 3,675,883.

Ajax Magnethermic Corporation: *See—*
Amend, Clifford L., 3,675,908.

Akaiki, Seiji; and Morinaga, Akira, to Nissan Motor Company Limited and Atsugi Motor Parts Company, Limited. Apparatus for separating lubricant from a refrigerant lubricant mixture in a reciprocating type automotive air conditioner compresser. 3,676,024, Cl. 417-372.000.

Akashi, Goro; Suzuki, Osamu; and Nakamura, Matsuaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 3,676,217, Cl. 117-239.000.

Akers, Richard L.; and Oplinger, Donald W., to Du Pont de Nemours, E. I., and Company. Yarn winding apparatus barrel cam and method of making the cam groove. 3,675,863, Cl. 242-43.000.

Aktiebolaget Kanthal: *See—*
Schrewelius, Nils Gustav, 3,676,093.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Mauthe, Gerhard, 3,676,624.

Aktiengesellschaft fur Brauerei-Industrie: *See—*
Raible, Karl J., 3,676,367.

Aktiengesellschaft Loepfe: *See—*
Loepfe, Erich, 3,676,769.

Akzona Incorporated: *See—*
Helmut, Werner; Frank, Dieter; and Drachenberg, Werner, 3,676,245.
Schwaller, Lando J.; Razal Albert J.; and White, John G., 3,675,450.

Alarm Products International, Inc.: *See—*
Parlato, Philip Joseph, 3,676,811.

Albers, Edwin W.: *See—*
Scherzer, Julius; and Albers, Edwin W., 3,676,368.

Albertson, Robert V. Stepwise movable V-belt drive pulley. 3,675,500, Cl. 74-230.17e.

Albertson, Robert V. Axial flow pump. 3,676,013, Cl. 415-128.000.

Albus, Peter, to Siemens Aktiengesellschaft. Planar technique for producing semiconductor microcomponents. 3,676,126, Cl. 96-36.200.

Alcan Research and Development Limited: *See—*
Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, 3,676,105.

Alden, Milton, to Alden Research Foundation. Paper cutter. 3,675,523, Cl. 83-167.000.

Alden Research Foundation: *See—*
Alden, Milton, 3,675,523.

Alden Self-Transit Systems Corporation: *See—*
Hall, Edwin F., 3,675,584.

Aldrich Chemical Company: *See—*
Biel, John Hans; and Klundt, Irwin L., 3,676,492.

Alexander, David Lee: *See—*
Sweeney, William M.; and Alexander, David Lee, 3,675,671.

Alfano, Marco, to Silma. Cinematographic apparatus. 3,675,873, Cl. 242-192.000.

All-Steel Equipment Inc.: *See—*
Beaver, Donald V., 3,676,279.

Allen, Richard A., to Avco Corporation. Fade testing method and device using filtered ultra-violet radiation. 3,675,477, Cl. 73-150.000.

Allen, William J.; and Barber, Michael D., to Seaview Enterprises, Inc. Golf putter with three prong shaft attachment. 3,675,923, Cl. 273-80.200.

Allen-Bradley Company: *See—*
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., 3,676,822.

Allied Chemical Corporation: *See—*

Degginger, Edward R., 3,676,169.
Schroeder, Kenneth H.; and Kelly, George J., Jr., 3,676,219.
Stephenson, Robert L., 3,675,281.

Allington, Robert W., to Instrumentation Specialties, Inc. High sensitivity light absorbance apparatus. 3,676,686, Cl. 250-206.000.

Allington, Trevor Richard, to RCA Corporation. Method of electrically mounting components in hybrid circuits. 3,676,252, Cl. 156-277.000.

Allis-Chalmers Manufacturing Company: *See—*
Pflanz, Herbert M., 3,676,621.

Allnutt, Anthony J.: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.

Alpha Industries, Inc., mesne: *See—*
Levi, Clifford A., 3,675,314.

Alps Electric Co., Ltd.: *See—*
Nomura, Yukihiko, 3,676,827.

Altec, Inc.: *See—*
Castleberry, Joseph C., 3,676,017.

Alza Corporation: *See—*
Higuchi, Takeru; and Hussain, Anwar, 3,676,549.
Pharriss, Bruce B.; and Anliker, Max, 3,675,647.
Pharriss, Bruce B.; and Anliker, Max, 3,675,648.

Amano Corporation: *See—*
Sato, Reiji, 3,675,415.

Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, to Fuji Shashin Film Kabushiki Kaisha; now and Fuji Photo Film Co., Ltd. Color photographic printing paper. 3,676,139, Cl. 96-82.000.

Amburn, Raymond D. Apparatus for magnetically treating seeds. 3,675,367, Cl. 47-1.300.

Amend, Clifford L., to Ajax Magnethermic Corporation. Quenching device. 3,675,908, Cl. 266-6.00s.

American Bank Note Company, mesne: *See—*
Wicker, Ralph C., 3,675,948.

American Can Company: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, 3,676,543.
Hake, Walter Thomas; and Stieglitz, Henry Gilbert, 3,676,271.
Hein, Matthew Edward, 3,675,824.
Wendricks, Roland Norbert, 3,676,034.

American Chain & Cable Company, Inc.: *See—*
Stokes, Joseph F.; and Van Vessem, George E., 3,676,774.

American Cyanamid Company: *See—*
Gallacher, Lawrence Vincent, 3,675,391.
Song, John, 3,676,449.
Story, Richard-Neil; and Bundegaard, Howard, 3,676,540.

American Export Isbrandtsen Lines, Inc.: *See—*
Dluhy, Herbert, 3,675,795.

American Hoechst Corporation: *See—*
Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., 3,676,559.

American Home Products Corporation: *See—*
Zilliken, Frederick William; and Egge, Heinz, 3,676,472.

American Optical Corporation: *See—*
Wilton, Henry T., 3,675,998.

Ametek, Inc.: *See—*
Summers, Stanely E.; and Seltzer, Clyde W., 3,675,282.

AMF Incorporated: *See—*
Des Jardins, Joseph A., 3,675,912.

AMH Corporation: *See—*
Moden, James R., 3,675,279.

AMSTED Industries Incorporated: *See—*
Becque, John H., 3,675,494.
Germain, Andrew G.; and Dressel, William G., 3,675,518.
Mulcahy, Harry W.; and Russell, Thomas B., 3,675,350.
Peck, Richard O., 3,675,889.

Amusin, Boris Zinovievich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.

Amvit: *See—*
Potter, Charles, 3,675,685.

Ancona, Anthony, to Chandler Evans, Inc. Digital function generator for two independent variables with interpolation. 3,676,655, Cl. 235-152.000.

Anderson, David G., to Quanta Welding Company. Article of manufacture and method of making the same. 3,676,636, Cl. 219-117.00r.

Anderson, David G., to Quanta Welding Company. Aperture cover and method of making the same. 3,676,637, Cl. 219-117.00r.

Anderson, Glenn H.: *See—*
Tsai, James H.; and Anderson, Glenn H., 3,676,474.

Anderson, John E.; and Sinnett, Homer Dayle, to State of Nebraska. Surface elevation profile measuring device. 3,675,545, Cl. 94-46.000.

Anderson, John Wallace; and Loughridge, Frederick Ardel, to Sylvania Electric Products, Inc. Photoflash lamp having laminated glass envelope. 3,676,043, Cl. 431-93.000.

Anderson, Keith B.: *See—*
Best, Albert M.; and Anderson, Keith B., 3,675,802.

Anderson, Philip Warren; Dynes, Robert Carr; and Fulton, Theodore Alan, to Bell Telephone Laboratories, Incorporated. Supercurrent structures utilizing mobil flux vortices. 3,676,718, Cl. 307-306.000.

Anderson Power Products, Inc.: *See—*
Sharaf, Harold M.; and Eby, Richard L., 3,676,770.

Anderson, Scott. Process relating to ultra-pure metal halide particles. 3,676,534, Cl. 264-9.000.

Anderson, Terry P.; and Parker, Fred W., to Du Pont de Nemours, E. I., and Company. Process for preparing a thermosetting acrylic enamel modified with cellulose acetate butyrate. 3,676,377, Cl. 260-15.000.

Andersson, Per-Erik; and Bergholm, Carl Arne, to Svenska Cellulosa Aktiebolaget. Process and device for recovering sulfur dioxide from waste sulfite liquor. 3,675,707, Cl. 159-20.000.

Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., to Delavan Manufacturing Co. Compensated hydraulic device. 3,676,020, Cl. 417-222.000.

Andruchiw, Roman. Method of illuminating preselected areas of a display. 3,675,997, Cl. 353-28.000.

Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich. Fuel pump for internal combustion engines. 3,676,023, Cl. 417-253.000.

Anellux Systems Corporation, mesne: *See—*
Rosebrook, Roy, Sr., 3,675,890.

Ankeny, Jay H.: *See—*
Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., 3,676,020.

Anliker, Max: *See—*
Pharriss, Bruce B.; and Anliker, Max, 3,675,647.
Pharriss, Bruce B.; and Anliker, Max, 3,675,648.

Ansaks Industries, Inc.: *See—*
Austin, Leonard H., 3,675,390.

Anstey, Nigel Allister. Seismic prospecting with a continuous seismic source. 3,676,841, Cl. 340-15.5cc.

Anthony, Anne-Marie, nee Barbier: *See—*
Loup, Jean-Pierre Olivier; Gutknecht, Jacques Emile; and Anthony, Anne-Marie, nee Barbier, 3,676,771.

Anthony, William H.: *See—*
Pryor, Michael J.; and Anthony, William H., 3,676,113.

Anzuino, Giuseppe, to Colgate-Palmolive Company. Modification of reduced keratinous substrates with a vinyl monomer. 3,676,550, Cl. 424-71.000.

Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., to Goodyear Tire & Rubber Company, The. Tire building apparatus having a plurality of component applying stations and drums. 3,676,259, Cl. 156-395.000.

Appleby, Paul E.; Riggs, Robert S.; and Woodhall, Edwin S., to Goodyear Tire & Rubber Company, The. Tire building apparatus. 3,676,260, Cl. 156-396.000.

Appleby, Paul E.; Folden, Denver C.; and Peck, Arland A., to Goodyear Tire & Rubber Company, The. Bead setting and ply turnup apparatus. 3,676,261, Cl. 156-401.000.

Appleton, Tony E. Machine for assembling a pre-hung door unit. 3,675,297, Cl. 29-200.00r.

Applied Power Industries, Inc.: *See—*
MacMillan, Charles W., 3,675,495.

Aquaria, Inc.: *See—*
Louis, Anthony, 3,676,665.

Arai, Kiyoyuki: *See—*
Kikuchi, Tomio; and Arai, Kiyoyuki, 3,675,548.

Araki, Kazumi: *See—*
Nakajima, Junichi; Araki, Kazumi; and Morinaga, Kenzo, 3,676,301.

Arblaster, Dennis. Double action spring clip. 3,675,275, Cl. 24-81.0hs.

Arcadia Refining Company: *See—*
Hix, Charles M., Jr., 3,675,427.

Archer, Sydney; and Schulenberg, John W., to Sterling Drug Inc. Haloalkanoyltetrahydroisoquinolinecarboxylic acid esters. 3,676,444, Cl. 260-287.00r.

Arel, Robert W.; and Meyer, Donald R., to Oster, John, Manufacturing Co. Automatic electric can opener. 3,675,321, Cl. 30-4.00r.

Arens, James L.; and Staten, Hi W., to Phillips Petroleum Company. Measurement of heat generated in exothermic reaction. 3,676,653, Cl. 235-151.300.

Argay, Rudolf: *See—*
Kangle, Purushottam Janardan; Ramanathan, Visvanathan; and Argay, Rudolf, 3,676,051.

Arias, Alan, to United States of America, National Aeronautics and Space Administration. Apparatus for producing metal powders. 3,675,910, Cl. 266-24.000.

Arias, Henry, Jr.: *See—*
Holmes, Frank; Arias, Henry, Jr.; and Read, George, 3,675,883.

Arndt, Charles J., to Harsco Corporation. Apparatus for placing concrete mix or the like. 3,675,762, Cl. 198-233.000.

Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, to Snam Progetti S.p.A. Polyene hydrocarbons and process for obtaining same. 3,676,510, Cl. 260-666.0py.

Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, to Snam Progetti S.p.A. Polyene hydrocarbons containing two conjugated double bonds and process for obtaining same. 3,676,511, Cl. 260-666.0py.

Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, to Snam Progetti S.p.A. Polyene hydrocarbons containing at least two conjugated double bonds and process for obtaining same. 3,676,512, Cl. 260-666.0py.

Arrow-Hart, Inc.: *See—*
Dennison, John J., 3,676,630.

Arsenius, Torsten Henry; and Hallstedt, Carl Goran Albin, to SKF Industrial Trading and Development Company, N.V. Bearing for supporting heavy rotating machinery. 3,675,977, Cl. 308-9.000.

Arthur, Jett C., Jr.; and Singh, Sujan, to United States of America, Agriculture. High energy radiation stabilization of cellulose obtained by esterifying with thenoyl chloride. 3,676,056, Cl. 8-120.000.

Artz, Kenneth W., to Grace, W. R., & Co. Vending container with cover therefor. 3,675,811, Cl. 220-20.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nishikawa, Yukiyasu; and Hidaka, Tsuneo, 3,676,692.

Ashland Oil & Refining Company: *See—*
Robin, Michael; and Schulte, Sheldon R., 3,676,530.

Ashland Oil Inc.: *See—*
Robins, Janis, 3,676,392.

Askins, Ralph W. Cigarette receptacle and extinguisher. 3,675,662, Cl. 131-235.

Asmus, Rodger W., to International Harvester Company. Low effort shuttle block selector spool modification for the manual feathering control and overspeed control for a hydrostatic transmission. 3,675,421, Cl. 60-53.00r.

Asmussen, Daniel R., to United Control Corporation. Demodulator for angularly related signals. 3,676,659, Cl. 235-186.000.

Astrom, Klas Johan: *See—*
Schoeps, Knut Christian; and Astrom, Klas Johan, 3,675,726.

Ateliers de Construction Electriques Charleroi (ACEC): *See—*
Jauquet, Christian, 3,676,669.

Atkins & Merrill, Inc.: *See—*
Koch, John H., 3,675,880.

Atlantic Richfield Company: *See—*
Borchert, Alfred E.; and Capaldi, Eugene C., 3,676,375.
Faulk, Joseph H.; Kern, Loyd R.; and King, Graham E., 3,675,728.
Haimula, Norman E., 3,675,430.

Atlas Copco Aktiebolag: *See—*
Schoeps, Knut Christian; and Astrom, Klas Johan, 3,675,726.

Atsugi Motor Parts Company, Limited: *See—*
Akaiki, Seiji; and Morinaga, Akira, 3,676,024.

Atwood, Lamar T.; and Gidge, Lester, to Union Carbide Corporation. Apparatus for changing mesh size of non-woven netting. 3,675,285, Cl. 28-1.0cl.

Audio Magnetics Corporation: *See—*
Abitboul, Georges D., 3,676,216.

Aufderhaar, Ernest: *See—*
Bosshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, 3,676,450.

Auger, Huey V.: *See—*
Ormand, Frederick T.; and Auger, Huey V., 3,676,563.

Austin, Leonard H., to Ansaks Industries, Inc. Capsule filling apparatus. 3,675,390, Cl. 53-282.000.

Australian Paper Manufacturers Limited: *See—*
Morris, Andrew W.; and Norman, Reginald J., 3,676,247.

Automatic Flag Poles, Inc.: *See—*
Stangarone, Gene; Cassara, Frank A.; and Dupont, Eugene F., 3,675,615.

Avco Corporation: *See—*
Allen, Richard A., 3,675,477.
Stiff, Bernard G. E.; and Finelli, Thomas M., 3,675,980.

Avelines, Raymond Andre, to Crane S.A. Cock with spherical casing. 3,675,893, Cl. 251-152.

Avent Industries, Inc.: *See—*
Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., 3,675,770.

Avery, Roger Peter, to Bunker-Ramo Corporation, The. Coaxial connector having one-piece clamp assembly. 3,676,573, Cl. 174-75.00c.

Avril, Arthur C., to A & T Development Corporation. Bag stacking machine. 3,675,790, Cl. 214-6.00p.

Axelrod, Norman Nathan, to Bell Telephone Laboratories, Incorporated. Group III-V Schottky barrier diodes. 3,675,316, Cl. 29-576.000.

B & J Manufacturing Company, mesne: *See—*
Corless, Lee M., 3,675,705.

Babcock & Wilcox Company, The: *See—*
Weaver, Galen K.; Shaffer, Howard A.; and Coughlin, Stephen A., 3,676,575.

Babcock, Lyndon R., Jr.; and Walker, Dale A., to Shell Oil Company. Process for preparation of high impact polystyrene. 3,676,527, Cl. 260-876.00r.

Bach, Walter H. Stacked battery construction having insulating disks between cells joined by welds. 3,676,221, Cl. 136-111.000.

Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Cury; and Wernick, Jack Harry, to Bell Telephone Laboratories, Incorporated. Use of MnAlGe in magnetic storage devices. 3,676,867, Cl. 340-174.0yc.

Badalich, Frank C.; and Watterlohn, Roy H., to Bell & Howell Company. Filmstrip projector with synchronized sound. 3,675,994, Cl. 352-163.000.

Bader, Jorg; and Gatzi, Karl, to Ciba-Geigy Corporation. 3-Aryliminо-1,2-dithiols. 3,676,459, Cl. 260-327.00c.

Badia, Frank Arthur; and Kirby, Gary Neil, to International Nickel Company, The. High strength copper-nickel alloy. 3,676,226, Cl. 148-32.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.

Bahr, Alex; and Peche, Gerhard, to Siemens Aktiengesellschaft. Gas-discharge overvoltage arrester. 3,676,743, Cl. 317-61.000.

Bailey, Loren C., 50% to Thompson, James C. Ladder mounting means for chalk line. 3,675,735, Cl. 182-129.000.

Bailey, Robert A.; and Michelsen, Arve, to United States of America, Navy. Coruscative shaped charge having improved jet characteristics. 3,675,575, Cl. 102-24.0hc.

Bailly, Roger Gaston, to Societe Anonyme, Societe Minere et Metallurgique de Penanoya. Portable metering charges for low viscosity materials. 3,675,827, Cl. 222-194.000.

Baker, Joseph S.; Marsan, Mario S.; and Duncan, Robert C., to Procter & Gamble Company, The. Disposable article with moisture-actuated indicating agent. 3,675,654, Cl. 128-287.000.

Baker, William J.; and Hurst, Richard J., to Gardner-Denver Company. Conductor wrapping tool. 3,675,861, Cl. 242-7.170.

Baker-Roos, Inc.: *See—*
Roggie, William Clark, 3,675,736.

Bakoledis, Andrew G., to Olin Corporation. Muzzle bushing assembly for power-actuated fastening tools. 3,675,838, Cl. 227-8.000.

Baldwin, Walton B.; and Burger, Donald A., to Bendix Corporation, The. Fluidic fuel system. 3,675,906, Cl. 261-23.00a.

Balint, Joseph A.: *See—*
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., 3,676,822.

Balmes, Mark E., Sr., to General Fire Extinguisher Corporation. Pressure indicator. 3,675,722, Cl. 169-30.000.

Balon Corporation: *See—*
Adams, Ladd M., 3,675,420.

Balthis, David L.: *See—*
Nix, Lawrence A., Jr.; and Balthis, David L., 3,676,591.

Baltz, Albert L.: *See—*
Vocke, Elmer E.; and Baltz, Albert L., 3,676,643.

Baltz, Albert L.; and Voeke, Elmer E., to Eagle Range and Manufacturing Company. Runner construction for oven rack. 3,675,638, Cl. 126-339.000.

Bancroft, Joseph, & Sons, Co.: *See—*
Cabello, Charles R., 3,675,286.

Banks, James L.: *See—*
Russell, Lewis K.; and Banks, James L., 3,676,742.

Barach, Howard J.: *See—*
Marshall, Robert A.; and Barach, Howard J., 3,675,780.

Baranowski, Leslie B., to Keene Corporation. Apparatus for the purification of oils and the like. 3,675,395, Cl. 55-164.000.

Barber, Michael D.: *See—*
Allen, William J.; and Barber, Michael D., 3,675,923.

Barber-Colman Company: *See—*
Davies, Everett H., 3,676,572.

Bardoneschi, Roland: *See—*
Muller, Georges; and Bardoneschi, Roland, 3,676,461.

Barger, William R., Jr.: *See—*
Garrett, William D.; and Barger, William R., Jr., 3,676,359.

Barlow, John W. Screw and screw driver combination. 3,675,694, Cl. 145-50.00a.

Barnard, Paul G.; Starliper, Aaron G.; and Stephenson, James B., to United States of America, Interior. Refining iron-bearing wastes. 3,676,107, Cl. 75-109.000.

Barr, Robert D. Carrying rack for motorcycle or similar vehicle. 3,675,833, Cl. 224-29.00r.

Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., to Jackson, Byron, Inc. Motion compensating hoist. 3,675,900, Cl. 254-172.

Barron, Daniel. Sonar range prediction and tactical computer. 3,675,352, Cl. 40-31.000.

Barten, Antonius Martinus: *See—*
Vermeulen, Geert Jan; and Barten, Antonius Martinus, 3,675,687.

Bartens, Bjoern: *See—*
Bartens, Carl Emil, 3,676,618.

Bartens, Carl Emil; deceased (by Bartens, Karl E.; and Bartens, Bjoern; heirs), to Kristian Krog Sorensen. Push-button switch. 3,676,618, Cl. 200-77.000.

Bartens, Karl E.: *See—*
Bartens, Carl Emil, 3,676,618.

Bartlett, Wilford O.: *See—*
Scala, Luciano C.; and Bartlett, Wilford O., 3,676,383.

Bartolomeo, Blase J.: *See—*
La Rocca, James J.; and Bartolomeo, Blase J., 3,675,668.

BASF Wyandotte Corporation: *See—*
Ciko, John D., 3,676,353.
Kaneko, Thomas M.; Schmolka, Irving R.; and Compton, John W., 3,676,354.

Basham, Edgar William James; and Tizard, Kenneth Wilfrid, to Westland Aircraft Limited. Electronically controlled oxygen regulators. 3,675,649, Cl. 128-142.00r.

Bass, Patrick: *See—*
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, 3,676,876.

Bata Shoe Company, Inc.: *See—*
Maltby, Frank Vincent, 3,676,542.

Bateson, Norman E.; and Pringle, William L., to Pullman Incorporated. Truss-type cargo carrying vehicle. 3,675,592, Cl. 105-368.00r.

Battelle Development Corporation, mesne: *See—*
Pederson, Arthur M., 3,675,484.

Batzer, Hans: *See—*
Haug, Theobald; and Batzer, Hans, 3,676,455.

Bauer, Franz; Besemer, Karl Friedrich; and Kinner, Gotthard, to Siemens Aktiengesellschaft. Testing probe construction. 3,676,776, Cl. 324-72.500.

Bauer, Peter, to Bowles Fluidics Corporation. Bi-directional fluidic elements and circuits. 3,675,669, Cl. 137-1.000.

Bauer, Richard G.; and Patitsas, George P., to Goodyear Tire & Rubber Company, The. Ethylhexyl acrylate-acrylonitrile-divinylbenzene terpolymers. 3,676,410, Cl. 260-80.810.

Baughman, Gaylord G., to Cascade Corporation. Load-handling apparatus with reach mechanism. 3,675,803, Cl. 214-730.000.

Baukal, Albert Jozel: *See—*
Viktora, Josef Karel; and Baukal, Albert Jozel, 3,675,488.

Baustin, Michel M. Means for recording medicinal dosages. 3,675,620, Cl. 116-121.000.

Bawduniak, Joseph A.: *See—*
Macartney, Carl H.; and Bawduniak, Joseph A., 3,675,469.

Bayer, Bernd: *See—*
Riess, Werner; Schaefer, Helmut; and Bayer, Bernd, 3,676,180.

Bays, Marvin G., to Delta Exploration Company, Inc. Underwater seismic acoustic energy signal source. 3,676,840, Cl. 340-12.000.

Beare, Gene K.; Kopelman, Bernard; and Seeger, Donald E., to Sylvania Electric Products Inc. Indicating flashlamp. 3,676,663, Cl. 240-1.300.

Beaver, Donald V., to All-Steel Equipment Inc. Sandwich top construction for office furniture. 3,676,279, Cl. 161-44.000.

Beck, Hansludwig: *See—*
Brandenburg, Helmut; and Beck, Hansludwig, 3,676,268.

Beck, Joseph H., to Video Information Systems, Inc. Interrogated transponder system. 3,676,580, Cl. 178-5.100.

Becque, John H., to AMSTED Industries Incorporated. Pipe testing. 3,675,494, Cl. 73-432.00r.

Bedetti, Gianfranco, to Montecatini Edison S.p.A. Apparatus for the combustion of titanium tetrachloride with oxygen for the production of titanium dioxide pigment. 3,676,060, Cl. 23-277.00r.

Beehler, Vernon D.: *See—*
Sawyer, Harold T., 3,676,218.

Beeli, Johann Battesta, to International Telephone and Telegraph Corporation. Storage tube construction. 3,676,726, Cl. 313-65.00r.

Beene, Calvin D., to Schlumberger Technology Corporation. Articles of manufacture including cylindrical members having specially terminated protective coatings. 3,675,950, Cl. 285-45.000.

Behrendt, Lothar: *See—*
Schorr, Manfred; Durckbeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,676,446.

Belew, Robert R., to United States of America, National Aeronautics and Space Administration. Thermal compensating structural member. 3,675,376, Cl. 52-1.000.

Bell & Howell Company: *See—*
Badalich, Frank C.; and Watterlohn, Roy H., 3,675,994.
Cherniavsky, Jaroslav, 3,675,995.
Freeland, Stanley R., 3,675,559.
Grant, Peter H., 3,675,869.
Rempala, Chester S., 3,675,877.

Bell and Howell Company: *See—*
Upadhyay, Pravin M., 3,675,503.

Bell Canada-Northern Electric Research Limited: *See—*
Lock, Roger David, 3,676,872.

Bell, Norman; and Lam, Hung-Kei H., to Kaiser Aluminum & Chemical Corporation. Purification of magnesium chloride solutions. 3,676,077, Cl. 23-296.000.

Bell Telephone Laboratories, Incorporated: *See—*
Anderson, Philip Warren; Dynes, Robert Carr; and Fulton, Theodore Alan, 3,676,718.
Axelrod, Norman Nathan, 3,675,316.
Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, 3,676,867.
Beurrier, Henry Richard, 3,676,790.
Bobeck, Andrew Henry, 3,676,870.
Brewer, Sherman Theodore, 3,676,613.
Brojdo, Samuel, 3,676,715.
Burckhardt, Christoph B.; and Doherty, Edward T., 3,676,130.
Carlson, Herbert Neil, 3,676,786.
Copeland, John Alexander, III, 3,676,871.
Dalton, John Vincent; and Labuda, Edward Franklin, 3,676,727.
Danielmeyer, Hans Guenter, 3,676,799.
De Lange, Owen Edward, 3,676,684.
English, Alan Taylour; and Turner, Paul Anthony, 3,676,214.
Fefferman, Gerald Burt, 3,676,087.
Flanagan, James Loton; Kronmeyer, James Hughes; and Nelson, John Richard, 3,675,513.
Forst, Steve Michael; and Reinheimer, Horst Alfred, 3,676,741.
Gloge, Detlef Christoph, 3,675,985.
Goldthorp, David Clayton; Limiero, Albert David; and Smith, John Paul, 3,676,608.
Hara, Katsuyuki; and Schonhorn, Harold, 3,676,289.
Jetzt, John J., 3,676,589.
Kogelnik, Herwig Werner; and Shank, Charles Vernon, 3,675,990.
Kurth, Carl Ferdinand, 3,676,598.
La Macchia, John Thomas, 3,675,983.
Mason, Warren Perry, 3,676,805.
Michaelis, Paul Charles, 3,675,298.
Mueller, Kurt Hugo, 3,676,804.
Murray, Robert W.; and Story, Paul R., 3,676,394.
Nash, Donald H.; Nenninger, Theodore P.; and Prescott, Robert E., 3,676,607.
Peterson, Gerald Henry, 3,676,597.
Retajczyk, Theodore Frank, Jr., 3,676,240.
Singh, Shobha; and Van Uitert, Legrand Gerard, 3,676,695.
Smith, George Elwood, 3,675,319.
Vazirani, Hargovind Nihchaldas, 3,676,223.
Weischedel, Herbert Rudolf; and Westerman, George Raymond, 3,676,800.
Whiteyer, James Glenn, 3,676,604.
Zebe, Charles, 3,675,315.

Bellaton, Roland: *See—*
Ride, Jean-Louis; and Bellaton, Roland, 3,675,870.

Beller, Hans Albert, to ITT Industries, Inc. Spot-type disc brake. 3,675,744, Cl. 188-73.600.

Beller, Zoltan: *See—*
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.

Beloit Corporation: *See—*
Daane, Robert A., 3,675,337.

Bendix Corporation: *See—*
Somer, Toivo A., 3,676,676.

Bendix Corporation, The: *See—*
Baldwin, Walton B.; and Burger, Donald A., 3,675,906.
Freedman, Morris D., 3,676,687.
Freedman, Morris D., 3,676,866.
Frei, Karl; and Hood, Edwin Elliott, 3,675,740.
Frei, Karl; and Hood, Edwin Elliott, 3,675,741.
Henegar, Hubert B., 3,676,650.
McDaniel, George H., 3,676,651.
McDaniel, George H., 3,676,760.
Morrey, Walter T., 3,676,768.

Bendler, Hellmut: *See—*
Gawlick, Heinz; and Bendler, Hellmut, 3,675,533.

Benedek, Gyorgy: *See—*
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.

Bengtsson, Bigge, to TeBe Elprodukter AB. Closet means. 3,675,250, Cl. 4-111.000.

Beninger, Darrell J.: *See—*
Martin, John P.; Beninger, Darrell J.; and Lemon, John R., 3,675,317.

Benson, Gustav E.: *See—*
Marzocchi, Alfred; Benson, Gustav E.; and Leach, Robert E., 3,675,704.

Bentley, William: *See—*
Jorgensen, Adam A.; Bentley, William; and Urycki, Edward, 3,676,747.

Bentz, Alan P.; and Scarpellino, Richard, to General Foods Corporation. Flavor enhancing materials and method of preparing same. 3,676,156, Cl. 99-140.00r.

Benz, Mark G.: *See—*
Martin, Donald L.; and Benz, Mark G., 3,676,577.

Bereday, Sigmund. Seat construction. 3,675,970, Cl. 297-452.

Beres, Steven W., to VCA Corporation. Tamperproof aerosol dispenser. 3,675,831, Cl. 222-402.110.

Beretta, Pier Carlo, to Fabrica d'Armi P. Beretta S.p.A. Automatic rifle. 3,675,534, Cl. 89-185.000.

Berezovsky, Pavel Iosipovich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Berg, Louis L., to Creative Tool Company. High energy impact wrench assembly. 3,675,515, Cl. 81-121.000.

Berg, Markus: *See—*
Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, 3,676,338.

Berg, Markus; Fries, Walter; and Kirstahler, Alfred, to Henkel & Cie G.m.b.H. Combinations of detergents with controlled foaming properties and washing agents containing them. 3,676,340, Cl. 252-8.750.

Berg, Richard E.: *See—*
Cummings, John P.; and Berg, Richard E., 3,676,321.

Bergh Bros. Co., Inc.: *See—*
Bergh, George G.; and Bergh, Robert G., 3,675,842.

Bergh, George G.; and Bergh, Robert G., to Bergh Bros. Co., Inc. Decorative covering for a container component. 3,675,842, Cl. 229-6.00r.

Bergh, Robert G.: *See—*
Bergh, George G.; and Bergh, Robert G., 3,675,842.

Bergholm, Carl Arne: *See—*
Andersson, Per-Erik; and Bergholm, Carl Arne, 3,675,707.

Bergwall, Carey. Electric plug. 3,676,831, Cl. 339-74.00r.

Berlincourt, Don A.; and Pim, Kendall A., to Vernitron Corporation. Multi-element piezoelectric circuit component. 3,676,724, Cl. 310-8.200.

Bernard, Arthur A.; and Bernard, Richard A., to Dover Corporation, mesne. Arc welding gun. 3,676,640, Cl. 219-130.000.

Bernard, Richard A.: *See—*
Bernard, Arthur A.; and Bernard, Richard A., 3,676,640.

Berndt, Claus. Rivet head arrangement for a wobble riveting machine. 3,675,461, Cl. 72-406.000.

Berol Corporation, mesne: *See—*
Kampmier, Thomas R., 3,675,886.

Besemer, Karl Friedrich: *See—*
Bauer, Franz; Besemer, Karl Friedrich; and Kinner, Gotthard, 3,676,776.

Best, Albert M.; and Anderson, Keith B., to Sperry Rand Corporation. Bale wagon. 3,675,802, Cl. 214-520.000.

Beurrier, Henry Richard, to Bell Telephone Laboratories Incorporated. Differential feedback amplifier. 3,676,790, Cl. 330-30.00d.

Bevan, Robert H.; and Buffone, Vincent D., to Goulds Pumps, Incorporated. Pump. 3,676,014, Cl. 415-200.000.

Biard, Daniel Guy Jean: *See—*
Zaki, Wahib Nassif; and Biard, Daniel Guy Jean, 3,676,374.

Bickerdike, Robert Lewis; and Hughes, Garyth, to National Research Development Corporation. Carbon materials and articles. 3,676,160, Cl. 106-38.900.

Bidell, Frederick W.; and Hughes, Richard J., to GTE Sylvania Incorporated. Frequency synthesizer apparatus having automatic fine tuning. 3,676,794, Cl. 331-11.000.

Biel, John Hans; and Klundt, Irwin L., to Aldrich Chemical Company. Amino acid amides of disubstituted phenethylamines. 3,676,492, Cl. 260-559.

Biermann, William A., to Controls Company of America. Metering valve. 3,675,892, Cl. 251-121.000.

Biland, Hans Rudolf; and Duennenberger, Max, to Ciba Limited. Carboxylic acid amides. 3,676,494, Cl. 260-559.00t.

Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, to Singer Company, The, mesne. Thermal shield. 3,675,711, Cl. 165-32.000.

Bingham & Taylor: *See—*
Zinn, Frank R., 3,676,567.

Bio-Analytical Laboratories, Inc.: *See—*
Fiore, John M., 3,675,641.

Bio-Consultants, Inc.: *See—*
Drucker, Kenneth G., 3,676,723.
Drucker, Kenneth Gus, 3,675,846.

Bishop, Nigel Douglas: *See—*
Snell, Brian Kenneth; and Bishop, Nigel Douglas, 3,676,443.

Black, Charles A., to Detrex Chemical Industries Inc. Percolator distillation system. 3,676,307, Cl. 203-20.000.

Blackmond, Ronald C., to Robicon Corporation. Multiphase alternating current regulation system for transformer-coupled loads. 3,676,766, Cl. 323-6.000.

Blackwell, Dana J., to Lewis Engineering Company, The. Remote controlled clock reset device. 3,675,410, Cl. 58-35.00r.

Blagg, Leon. Coupler-aligning trailer hitch. 3,675,947, Cl. 280-500.000.

Blair, George S.: *See—*
Burrage, Benjamin S.; and Blair, George S., 3,675,760.

Blake, Stephen, to Pennwalt Corporation, mesne. 1,6-Bis(2-oxacyclohexyl)-hexane-1,6-diones and a process for producing them. 3,676,498, Cl. 260-586.00r.

Blanchard, Eugene J.: *See—*
Lofton, John T.; Harper, Robert J., Jr.; and Blanchard, Eugene J., 3,676,207.

Blank, Wallace J., to Oshkosh Truck Corporation. Powershift transmission. 3,675,508, Cl. 74-745.000.

Blankenstein, Gunter: *See—*
Wolf, Gerhard D.; Blankenstein, Gunter; and Nischk, Gunter, 3,676,525.

Blatt, Leland F. Pressure safety release industrial air exhaust silencer. 3,675,733, Cl. 181-37.000.

Blatt, Leland F. Dual plunger actuated sealed combination safety and interlock switch mechanism. 3,676,625, Cl. 200-153.0la.

Blatt, Leland Francis; and Wiesenhofer, Frank H. Silencer with frequency separating and modulating baffle. 3,675,734, Cl. 181-56.000.

Blazek, William S., to TRW Inc. Method of making accurate cores. 3,675,708, Cl. 164-35.000.

Bletz, Howard W., to Therm-O-Disc, Incorporated. Adjustable thermostat. 3,676,817, Cl. 337-347.000.

Block, Hans-Jurgen: *See—*
Netzer, Theodor; and Block, Hans-Jurgen, 3,676,233.

Blommers, Elizabeth, to Koppers Company, Inc. Reinforced foam polystyrene laminate. 3,676,284, Cl. 161-93.000.

Blomquist, Arnold W., to Sci-Med, Inc., mesne. Detection system for insecticides. 3,675,490, Cl. 73-425.000.

Bluestein, Bernard B., to Sunbeam Corporation. Steaming apparatus with removable brush. 3,675,449, Cl. 68-222.000.

Bobeck, Andrew Henry, to Bell Telephone Laboratories, Incorporated. Single wall domain transfer circuit. 3,676,870, Cl. 340-174.0tf.

Boch, Jean Baptiste Christian: *See—*
Redel, Joseph; and Boch, Jean Baptiste Christian, 3,676,499.

Bodenseewerk Geratetechnik GmbH: *See—*
Schwarz, Karlhans, 3,676,843.

Boel, Michel; and Dechenne, Roger, to Solvay & Cie. Process for the polymerization and copolymerization of vinyl monomers and the resin compositions obtained thereby. 3,676,413, Cl. 260-87.500.

Boelter, Donald A., to General Aviation Electronics, Inc. Device for automatically identifying unknown transistors. 3,676,767, Cl. 324-158.00d.

Boer, Machiel, to Tektronix, Inc. Film attenuator with distributed capacitance high frequency compensation. 3,676,807, Cl. 333-81.00a.

Bokros, Jack C., to Gulf Oil Corporation. Coated article and method for making same. 3,676,179, Cl. 117-46.0cg.

Bolte, Herbert: *See—*
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.

Bond, Leo H. Method of coating a vehicle headlight lens. 3,676,191, Cl. 117-77.000.

Bonded Products, Inc.: *See—*
Hight, Hanford Z.; and Lesky, Stephen, 3,676,254.

Bonnet, Maurice, to Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR). Device for recording and reproducing. 3,675,554, Cl. 95-18.00p.

Bonzom, Albert; and Tramier, Bernard, to Societe Nationale des Petroles d'Aquitaine. Synthesis of pyrazines. 3,676,442, Cl. 260-250.00r.

Boothe, Willis A.: *See—*
Kantola, Robert A.; and Boothe, Willis A., 3,675,473.

Borchert, Alfred E.; and Capaldi, Eugene C., to Atlantic Richfield Company. Adamantyl epoxide polymers. 3,676,375, Cl. 260-2.00a.

Borgstrom, Gote Ingvar, to Abu Aktiebolag. Taximeter having a stamping mechanism. 3,675,847, Cl. 235-30.000.

Borkoski, Stanley B., to Pre-Heat Welding Company, Inc. Process for reconditioning cylinder heads. 3,675,309, Cl. 29-401.000.

Borruso, Joseph V.: *See—*
Kaldor, Robert M.; Borruso, Joseph V.; and Goldbaum, Elliott, 3,676,834.

Bosch, Robert, Photokino GmbH: *See—*
Riedel, Wolfgang, 3,675,874.

Bosley, Denis V.: *See—*
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., 3,675,361.

Bosshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, to Ciba-Geigy Corporation. 4-(Isothiocyanophenyl)-thiazoles. 3,676,450, Cl. 260-302.00s.

Boswell, Kay H.: *See—*
Shen, Tsung-Ying; and Boswell, Kay H., 3,676,422.

Botkin, Carl, to Addressograph-Multigraph Corporation. Process for making duplicates of microfilm. 3,676,001, Cl. 355-132.000.

Bottrell, Neil L.: *See—*
Furlong, Owen Desmond Arthur Charles; and Bottrell, Neil L., 3,676,238.

Bouche, Raymond R. Method of measuring vibration characteristics of structures. 3,675,471, Cl. 73-67.000.

Bouhot, Marcel Pierre Alexis. Double acting free wheel. 3,675,745, Cl. 188-134.000.

Bourke, Edgar R., II; and Snow, Robert C., to Digital Security Systems, Inc. Currency dispensing apparatus. 3,675,816, Cl. 221-13.000.

Bourton, Hubert. Snow vehicle for distributing dust on snow surfaces. 3,675,857, Cl. 239-668.000.

Bowen Tools, Inc.: *See—*
Slator, Damon T.; and Peil, Archie W., 3,675,719.

Bowers, Jack R.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.

Bowles Fluidics Corporation: *See—*
Bauer, Peter, 3,675,669.
Freeman, Peter A., 3,675,672.

Boyer, Simone L.; and Caridi, Roger, to Eastman Kodak Company. Method of spectrally sensitizing photographic silver halide emulsions. 3,676,147, Cl. 96-130.000.

Boylan, Joseph S., to McNeil Corporation. In-plant cleaning system. 3,675,849, Cl. 239-124.000.

BP Chemicals (U.K.) Limited: *See—*
Capp, Clifford William; Harris, Brian Walton; and Hawkins, Edwin George Edward, 3,676,430.
Capp, Clifford William; and Denbigh, Keith Warwick, 3,676,431.

Bracken, Leslie Thomas: *See—*
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, 3,676,876.

Brady, Donnie G.: *See—*
Scruggs, Jack G.; and Brady, Donnie G., 3,676,484.

Braginetz, Paul A., to Morris, Philip, Incorporated. Disposable preassembled plastic razor. 3,675,323, Cl. 30-32.000.

Brand S. Corporation: *See—*
Russell, Phillips G.; Guggenbickler, Leon E.; and Crawford, John H., 3,675,791.

Brand, Werner: *See—*
Tonne, Franz; Brand, Werner; and Wolowitz, Benno, 3,675,593.

Brandenburg, Helmut; and Beck, Hansludwig, to Gebr. Eickoff, Maschinenfabrik und Eisengiessair m.b.H. Machine for making double faced corrugated paperboard comprising a plurality of rows of axially spaced staggered pressure rolls. 3,676,268, Cl. 156-548.000.

Braner Engineering, Inc.: *See—*
Moor, Herman L., 3,675,569.

Brauer, Gerhard M.: *See—*
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, 3,675,327.

Braun, Jurgen: *See—*
Uhlig, Fritz; and Braun, Jurgen, 3,676,134.

Bray, Derek. Low distortion AGC amplifier. 3,676,789, Cl. 330-29.000.

Breen, William J. Flush valve assembly. 3,675,249, Cl. 4-57.00p.

Bremmer, James S.; Koste, Bernard F., deceased (by Koste, Elsie E., executrix). Agitator apparatus. 367,904, Cl. 259-108.000.

Bremmer, James S.; and Koste, Bernard F; deceased (by Koste, Elsie E.; executrix). Agitator apparatus. 3,675,904, Cl. 259-108.000.

Brendemuehl, Roger C., to Warner Electric Brake & Clutch Company. Photoelectric discontinuity and the like detector for multi-element arrays. 3,676,009, Cl. 356-199.000.

Brenn, Gemma Adriana. Spectacles having bands that reduce facial wrinkles. 3,675,991, Cl. 351-41.000.

Brenneisen, Paul: *See—*
Bosshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, 3,676,450.

Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., to Grace, W. R., & Co. Gasket-forming solvent-based compositions containing styrene-butadiene block copolymers. 3,676,386, Cl. 260-27.000.

Bretschneider, Erich, to Siemag Siegener Maschinenbau, G.m.b.H. Roll stand with working rolls supported in chocks. 3,675,455, Cl. 72-238.000.

Brewer, Sherman Theodore, to Bell Telephone Laboratories, Incorporated. Repeatered submarine cable system. 3,676,613, Cl. 179-170.00t.

Brick, Edmund J., 50% to Brick, Thomas J., 21% to Roberts, Theresa A. and 21% to Young, William E. Tambourine. 3,675,528, Cl. 84-418.000.

Brick, Thomas J.: *See—*
Brick, Edmund J., 3,675,528.

Brinckman, Eric Maria: *See—*
Willems, Jozef Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, 3,676,131.

Brink, Delbert L. Knockdown foamed plastic shipping container. 3,675,808, Cl. 220-7.000.

British Cellophone Limited: *See—*
Phillips, Cyril Howard; Brunton, James Charles; and Pearce, Geoffrey Downing, 3,676,185.

British Scientific Instrument Research Association: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.

Brockie, Thomas H., to Chrysler Corporation. Noise reduction apparatus. 3,676,012, Cl. 415-119.000.

Brodrene Gam A/S: *See—*
Gram, Hans, 3,675,443.

Broersma, Frank R.: *See—*
Elo, Arpad, Jr.; and Broersma, Frank R., 3,676,063.

Brojdo, Samuel, to Bell Telephone Laboratories, Incorporated. Semiconductor apparatus for image sensing and dynamic storage. 3,676,715, Cl. 307-304.000.

Bronstert, Klaus: *See—*
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.

Brook, Richard A.: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.

Broome, Barry Glenn: *See—*
Maure, Douglas Raymond; and Broome, Barry Glenn, 3,676,864.

Brother Kogyo Kabushiki Kaisha: *See—*
Yamashita, Chikao, 3,675,603.

Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, to Agfa-Gevaert Aktiengesellschaft. Process and apparatus for coating web supports. 3,676,178, Cl. 117-34.000.

Brown, Bruce J., to United States of America, Navy. Digital frequency lock generator. 3,676,793, Cl. 331-1.00a.

Brown, Don W.: *See—*
Condas, George A.; and Brown, Don W., 3,676,677.

Brown, Donald J., to Morehouse Industries, Inc., mesne. Connection fitting device with clean-out. 3,675,674, Cl. 137-244.000.

Brown, Henry, to Udylite Corporation. Electrolytic codeposition of polyvinylidene and copolymer particles with copper. 3,676,308, Cl. 204-16.000.

Brown, Thomas Desmond, to I.W.S. Nominee Company Limited. Textile process. 3,676,057, Cl. 8-128.000.

Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, to Woodrow, Taylor, Construction Limited. Strain gauges. 3,675,474, Cl. 73-88.00e.

Brownstein, Henry J., to Hysan Products Company. Treatment device. 3,675,254, Cl. 4-231.000.

Brumbelow, Joseph S. Non-sparking electrical switch. 3,676,622, Cl. 200-144.0ap.

Bruno, Joseph S.: *See—*
Harper, Robert J., Jr.; Bruno, Joseph S.; and Gautreaux, Gloria A., 3,676,052.

Brunton, James Charles: *See—*
Phillips, Cyril Howard; Brunton, James Charles; and Pearce, Geoffrey Downing, 3,676,185.

Bryan, Graham W.; and Green, David T., to United States Surgical Corporation. Instrument for ligating, suturing and dividing organic tubular structures. 3,675,688, Cl. 140-93.00d.

Buchanan, John K., to Motorola, Inc. Interface circuit for coupling bipolar to field effect transistors. 3,676,700, Cl. 307-205.000.

Buck, Ollie G.: *See—*
Hsieh, Henry L.; and Buck, Ollie G., 3,676,407.

Budrys, Ignas; and Lee, Ernest O., Jr., to Stromberg-Carlson Corporation. Code call circuit for paging in a PBX. 3,676,603, Cl. 179-18.0bf.

Buell, Halsey W., to Carborundum Company, The. Oversized abrasive coated products. 3,676,092, Cl. 51-295.000.

Buffone, Vincent D.: *See—*
Bevan, Robert H.; and Buffone, Vincent D., 3,676,014.

Buford, Claude W.: *See—*
Spiller, Lester L.; and Buford, Claude W., 3,676,171.

Bugaut, Andree: *See—*
Kalopissis, Gregoire; and Bugaut, Andree, 3,676,049.

Buhles, Herman, Jr. Dispensing machine. 3,675,828, Cl. 222-362.000.

Bundegaard, Howard: *See—*
Story, Richard-Neil; and Bundegaard, Howard, 3,676,540.

Bunker-Ramo Corporation, The: *See—*
Avery, Roger Peter, 3,676,573.
Segerdahl, Roy R.; and Jonke, Joseph L., 3,676,821.

Buonaiuto, Robert B. Apparatus for making thermoplastic cellular products. 3,676,033, Cl. 425-174.000.

Burckhardt, Christoph B.; and Doherty, Edward T., to Bell Telephone Laboratories, Incorporated. Beaded plate integral photography. 3,676,130, Cl. 96-40.000.

Burd, John W., to Monsanto Company. Apparatus for production of epitaxial films. 3,675,619, Cl. 118-48.000.

Burdett, Roy. Folding bed assembly for a vehicle. 3,675,965, Cl. 296-23.000.

Burger, Donald A.: *See—*
Baldwin, Walton B.; and Burger, Donald A., 3,675,906.

Burger, Francis J. P. J.; and Wu, Jie Chu, to Sprague Electric Company. Aluminum electrolytic capacitor. 3,676,752, Cl. 317-230.000.

Burgess, Donald M.: *See—*
Burgess, Kenneth M.; and Burgess, Donald M., 3,675,261.

Burgess, Kenneth M.; and Burgess, Donald M. Pool cleaning apparatus. 3,675,261, Cl. 15-1.700.

Burk, Marvin C., to Phillips Petroleum Company. Signal analysis and recording. 3,676,649, Cl. 235-151.300.

Burkhalter, Robert, Jr.: *See—*
Heskett, Don E.; Hoover, Frank Kryder; and Burkhalter, Robert, Jr., 3,675,777.

Burns Machine Co.: *See—*
Hook, Melvin S., 3,676,619.

Burrage, Benjamin S.; and Blair, George S., to Gerrard Company Ltd., mesne. Roller slat conveyor. 3,675,760, Cl. 198-183.000.

Burroughs Corporation: *See—*
Frederick, Harold M., 3,675,876.
Gosnell, Earl J.; and Taylor, Jerry H., 3,675,572.

Busch, Michael D., to Call-A-Computer, Inc., mesne. Message buffering communication system. 3,676,846, Cl. 340-146.1ba.

Busch, Norbert: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,676,496.

Buschbom, Floyd E.; Hansen, Glen D.; and Johnson, Roger L., to Van Dale Corporation. Livestock feeding apparatus. 3,675,758, Cl. 198-110.000.

Bush, Vannevar. Engine sealing. 3,675,738, Cl. 184-18.000.

Bush, William R. Saw assembly for sheet material. 3,675,526, Cl. 83-676.000.

CPC International Inc.: *See—*
Horn, Harold Edwin; Kimball, Bruce Allan; and Godzicki, Martin, 3,676,155.

Cabello, Charles R., to Bancroft, Joseph, & Sons, Co. Synchronizing yarn winding to stuffer crimper output. 3,675,286, Cl. 28-1.700.

Caccamesi, Vincent C.; and Der Marderosian, Aaron C., to Raytheon Company. Leak testing apparatus and method. 3,675,468, Cl. 73-40.700.

Cachelin, Gerard, to Fabique d'Horlogerie Ch. Tissot & Fils S.A. Wrist watches. 3,675,414, Cl. 58-88.00w.

Cahill Manufacturing Company, Inc.: *See—*
Cahill, William S., 3,675,706.

Cahill, Terence, to G. K. N. Somerset Wire Limited. Electric conductor cables for use in overhead power transmissions. 3,676,578, Cl. 174-128.000.

Cahill, William S., to Cahill Manufacturing Company, Inc. Tire buffing machine. 3,675,706, Cl. 157-13.000.

Calandra, Sam S. Hair roller. 3,675,663, Cl. 132-40.000.

Caldwell, William F., to Huntington Rubber Mills. Bushing for vibration-isolating mounting. 3,675,881, Cl. 248-9.000.

Call-A-Computer, Inc., mesne: *See—*
Busch, Michael D., 3,676,846.

Cama, Gerardo, to Coltex, S.L. Apparatus for cleaning metallic parts. 3,675,666, Cl. 134-105.000.

Cambridge Thermionic Corporation: *See—*
Cox, Irvin W., 3,676,253.

Campbell, Alastair; and Robinson, Peter, to Imperial Chemical Industries Limited. Stabilised trichloroethylene. 3,676,507, Cl. 260-652.50r.

Campo, Philip. Filter device. 3,675,776, Cl. 210-232.000.

Canon Kabushiki Kaisha: *See—*
Komori, Shigehiro; and Hattori, Hiroyuki, 3,675,999.
Sanada, Noriaki; and Ito, Masaharu, 3,675,562.
Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, 3,675,547.

Capaldi, Eugene C.: *See—*
Borchert, Alfred E.; and Capaldi, Eugene C., 3,676,375.

Capp, Clifford William; Harris, Brian Walton; and Hawkins, Edwin George Edward, to BP Chemicals (U.K.) Limited. Production of caprolactam. 3,676,430, Cl. 260-239.301.

Capp, Clifford William; and Denbigh, Keith Warwick, to BP Chemicals (U.K.) Limited. Production of caprolactam. 3,676,431, Cl. 260-239.30a.

Carborundum Company, The: *See—*

Buell, Halsey W., 3,676,092.
Wilder, Harvey H., 3,675,374.
Carder, Victor H.; and Cook, Kenneth L., to Cochran Western Corporation. Container transporter apparatus. 3,675,798, Cl. 214-84.000.
Caridi, Roger: *See—*
Boyer, Simone L.; and Caridi, Roger, 3,676,147.
Carl Zeiss-Stiftung; d/b/a: *See—*
Prugger, Hans; and Torge, Reimund, 3,676,004.
Carlsen, Donald W.; Kotla, John J.; and Parker, Arden A., to International Business Machines Corporation. Document with chemically developable precisely defined alphanumeric characters. 3,676,646, Cl. 235-61.12n.
Carlson, Edgar; and Lehrian, William R., to Gulf Research & Development Company. Hydrodesulfurization utilizing multiple hydrogen recycle streams. 3,676,333, Cl. 208-209.000.
Carlson, Harold C. R. Spring tester. 3,675,479, Cl. 73-161.000.
Carlson, Herbert Neil, to Bell Telephone Laboratories, Incorporated. Locked oscillator circuits. 3,676,786, Cl. 329-122.000.
Carpentier, Jan Albert; and De Pauw, Alfons Jozef, to Agfa-Gevaert. Method of incorporating photographic ingredients into photographic collois compositions. 3,676,142, Cl. 96-100.000.
Carrier, Louis F.; and Spanke, Edwin A., to U.S. Industries, Inc. Gibs. 3,675,976, Cl. 308-3.000.
Carter, Sadie,: *See—*
Glicksman, Martin; Farkas, Elizabeth H.; and Carter, Sadie,, 3,676,150.
Casali, Gino; and Casali, Joseph P. Tube squeezer. 3,675,822, Cl. 222-103.000.
Casali, Joseph P.: *See—*
Casali, Gino; and Casali, Joseph P., 3,675,822.
Cascade Corporation: *See—*
Baughman, Gaylord G., 3,675,803.
Cassara, Frank A.: *See—*
Stangarone, Gene; Cassara, Frank A.; and Dupont, Eugene F., 3,675,615.
Castleberry, Joseph C., to Altec, Inc. Speed control. 3,676,017, Cl. 412-34.000.
Catano, Paul S.: *See—*
Murphree, Francis J.; and Catano, Paul S., 3,676,802.
Cathers, William P., to PPG Industries, Inc. Glass turnover and packing device. 3,675,788, Cl. 214-1.00q.
Catlett, John C., 1/3 to Gilson, James R. and 1/3 to Horwitz, Sam. Automatic balanced door with concealed drive. 3,675,370, Cl. 49-253.000.
Cavagnero, Erman V.; and Loftus, Joseph F., to Torin Corporation. Four-slide machine with improved mandrel for producing bearings and the like. 3,675,460, Cl. 72-399.000.
Cavins Co., The: *See—*
Fortner, William D., 3,675,751.
Cegedur GP: *See—*
Colas, Francois, 3,675,596.
Celanese Corporation: *See—*
Soehngen, John W., 3,676,239.
Cense, Adriaan: *See—*
Wensink, Bernardus Leonardus; and Cense, Adriaan, 3,676,714.
Centre Europeen de Recherches Mauvernay C.E.R.M.: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,676,496.
Century Engineering Corporation: *See—*
Merfeld, Michael J.; and Truesdell, Merlyn R., 3,675,851.
Cerberus AG: *See—*
Scheidweiler, Andreas; and Meier, Otto, 3,676,680.
Cesca, Sebastiano: *See—*
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,510.
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Ceska, Miroslav: *See—*
Ingelman, Bjorn G.; and Ceska, Miroslav, 3,676,303.
Chamberlin, Coleman R. File drawer divider. 3,675,781, Cl. 211-11.000.
Chambers, Walter S.: *See—*
Swiatosz, Edmund; and Chambers, Walter S., 3,675,343.
Chan, Charles S., to Metallic Building Company. Method of constructing parking garage structures. 3,675,385, Cl. 52-741.000.
Chance, Britton. Rapid-scanning dual wavelength spectrophotometer. 3,676,005, Cl. 356-97.000.
Chandler Evans, Inc.: *See—*
Ancona, Anthony, 3,676,655.
Chapa, Ruben F. End stop assembly for an automatic cut-off saw. 3,675,690, Cl. 143-46.00f.
Chapou, Yves. Mixing faucet. 3,675,683, Cl. 137-637.400.
Charbonnages de France: *See—*
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, 3,676,390.
Charters, Thomas H., to Tektronix, Inc. Apparatus for automatically testing integrated circuit devices. 3,676,777, Cl. 324-73.00r.
Chase, Fred L.: *See—*
Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., 3,676,386.
Chay, Dong M.; and Iler, Ralph K., to Du Pont de Nemours, E. I., and Company. Metal/carbide-oxide composite. 3,676,086, Cl. 29-195.000.
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Chemiefaser Lemzing Aktiengesellschaft: *See—*
Sabhofer, Franz; and Krassig, Johannes, 3,676,243.
Chemtob, Elie M.; White, William R.; and Marcote, Rolando V., to Occidental Petroleum Corporation. Flotation separation of glaserite from sodium chloride and other salts. 3,675,773, Cl. 209-166.000.
Cheney, Richard F.; and Parsons, Donald S., to Sylvania Electric Products, Inc. Molybdenum base alloys. 3,676,083, Cl. 29-182.000.
Cheng, Paul J.: *See—*
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.
Cherniavsky, Jaroslav, to Bell & Howell Company. Reversing mechanism for motion picture projectors. 3,675,995, Cl. 352-173.000.
Chesnokov, Alexandr Sergeevich: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.
Chevron Research Company: *See—*
Sharman, Samuel H., 3,676,372.
Sieg, Robert P., 3,676,522.
Chevtaev, Andrei Vasilievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.
Chia, Yuan-Tsan, to Du Pont de Nemours, E. I., and Company. Catalytic isomerization of 2-methyl-3-butenenitrile to linear pentenenitriles in the presence of certain metal salt and/or tri(hydrocarbyl)boron promoters. 3,676,481, Cl. 260-465.900.
Chicago Rawhide Manufacturing Company: *See—*
Hatch, Seymour A., 3,675,936.
Chmela, Stephen M. Lubricator for roll feed. 3,675,737, Cl. 184-17.000.
Chore-Time Equipment, Inc.: *See—*
Myers, Lawrence A., 3,675,627.
Christena, Ray C.; and Johnston, Earnest L., to Vulcan Materials Company. Polyesteramides. 3,676,291, Cl. 161-195.000.
Christena, Ray C.; and Johnston, Earnest L., to Vulcan Materials Company. Aziridine salts of dibasic acids. 3,676,424, Cl. 260-239.00e.
Christensen, Orla, to Disa Elektronik A/S. Method for depositing thin films on thin elongated electrically insulating substrates. 3,676,320, Cl. 204-192.000.
Christie, Christopher E.; and Martin, Eugene Earl, to Goodyear Tire & Rubber Company, The. Apparatus for building a foam inflated tire. 3,676,028, Cl. 425-38.000.
Chrysler Corporation: *See—*
Brockie, Thomas H., 3,676,012.
Mark, Alfred J., 3,675,289.
Churchill, Charles, Limited: *See—*
Pratt, Leslie Raymond, 3,675,454.
Ciba Limited: *See—*
Biland, Hans Rudolf; and Duennenberger, Max, 3,676,494.
Ciba-Geigy AG: *See—*
Kangle, Purushottam Janardan; Ramanathan, Visvanathan; and Argay, Rudolf, 3,676,051.
Nikles, Erwin, 3,676,441.
Nikles, Erwin, 3,676,486.
Rembold, Heinz; and Losert, Ewald, 3,676,200.
Ciba-Geigy Corporation: *See—*
Bader, Jorg; and Gatzi, Karl, 3,676,459.
Bosshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, 3,676,450.
Gruenfeld, Norbert, 3,676,456.
Haug, Theobald; and Batzer, Hans, 3,676,455.
Hubele, Adolf; and Rohr, Otto, 3,676,457.
Spivack, John D.; and Dexter, Martin, 3,676,531.
Ciccarelli, Roger N., to Xerox Corporation. Removing undesired potential from the blocking electrode in a photoelectrophoretic imaging system. 3,676,313, Cl. 204-181.000.
Ciko, John D., to BASF Wyandotte Corporation. Nonflouride laundry sour containing fumaric acid. 3,676,353, Cl. 252-136.000.
Cimber, Hugo S. Device for and method of temporary sterilizing a female. 3,675,639, Cl. 128-1.000.
Cincinnati Milacron Inc.: *See—*
Harper, Robert C., 3,675,903.
C.I.T.-Compagnie Industrielle des Telecommunications: *See—*
Tallegas, Francois, 3,676,855.
Ciuti, Brunello; and Del Ross, Sergio, to Snam Progetti S.p.A. Compositions useful for eliminating water surface pollution caused by organic substances. 3,676,357, Cl. 252-259.500.
Civjan, Simon: *See—*
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, 3,675,327.

Clapper, Thomas W.: *See—*
Goens, Duane N.; and Clapper, Thomas W., 3,676,315.
Clark, Arthur R.; and Clark, Margaret M. Method of treating plants. 3,676,102, Cl. 71-127.000.
Clark Equipment Company: *See—*
Hunter, Calvin W., 3,675,589.
Ibrahim, Fayez F., 3,675,440.
Perez, Arthur, 3,675,441.
Clark, Forrester A.: *See—*
Speller Frank N., Jr., 3,675,715.
Clark, Hubert M.: *See—*
Drutchas, Gilbert H.; and Clark, Hubert M., 3,675,422.
Clark, J. L., Manufacturing Co.: *See—*
Foster, John A., 3,675,812.
Clark, Margaret M.: *See—*
Clark, Arthur R.; and Clark, Margaret M., 3,676,102.
Clark, Wallace. Apparatus and method for governing the operation of down-hole earth boring motors. 3,675,727, Cl. 175-26.000.
Clarke, James A., to Dow Chemical Company, The. Oxazolidinone-containing epoxy resins and process for their preparation. 3,676,397, Cl. 260-47.0ep.
Clarkson Industries, Inc.: *See—*
Hoag, Don H., 3,675,778.
Clebel Inc.: *See—*
Gauthier, Oscar, 3,675,657.
Clement, Clyde H., 50% to Larson, Leland B. Beverage pump dispenser. 3,675,830, Cl. 222-385.000.
Clenaglass Electric Washer Limited: *See—*
Durham, Charles Edward, 3,675,263.
Clifford, Thomas J.; and Nelson, Robert C., to Hazeltine Corporation. Wire guide assembly for multiple coil winding machine. 3,675,860, Cl. 242-7.110.
Clinton Industries, Inc.: *See—*
Pirrello, Angelo, 3,675,602.
Clinton, Raymond O., to Sterling Drug Inc. 2-(1-Hydroxyalkyliden)-3-oxo steroids. 3,676,426, Cl. 260-239.55r.
Closa, Jose, to Super Caster Corporation. Tilted roller caster. 3,675,269, Cl. 16-18.00a.
Coast Marine & Industrial Supply Inc.: *See—*
Haglund, Bernard F.; and Salvarezza, Robert M., 3,675,257.
Coates, John Stuart, to Du Pont de Nemours, E. I., and Company. Regeneration of nickel-aluminum catalysts by polycarboxylic acid washing. 3,676,364, Cl. 252-413.000.
Cochran Western Corporation: *See—*
Carder, Victor H.; and Cook, Kenneth L., 3,675,798.
Cockerill-Ougree-Prodicence et Esperance-Longdoz: *See—*
Martelee, Ghislain Antoine Jean-Marie, 3,675,568.
Coded Signatures, Inc.: *See—*
Mayer, George L., Jr.; and Dobbins, David L., 3,676,000.
Coilcraft, Inc.: *See—*
Renskers, John O., 3,676,813.
Colas, Francois, to Cegedur GP. Load-carrying pallet. 3,675,596, Cl. 108-51.000.
Cole National Corporation: *See—*
Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., 3,675,536.
Coleman, George E., to PPG Industries, Inc. Apparatus for irradiation in a controlled atmosphere. 3,676,673, Cl. 250-49.5te.
Coleman, Larry R., to Honeywell Information systems, Inc., mesne. Apparatus for opening packages of laminated construction. 3,675,524, Cl. 83-459.000.
Colgate-Palmolive Company: *See—*
Anzuino, Giuseppe, 3,676,550.
Gerecht, John Fred; and Wixon, Harold Eugene, 3,676,341.
Hewitt, Gordon Trent; and Giordano, Annie Sue, 3,676,199.
Collier, William W.; and Smith, Ronald M., to International Business Machines Corporation. Interactive tie-breaking system. 3,676,860, Cl. 340-172.500.
Collins, Neil E.; Kerber, Elwyn W.; and Neville, Raymond R., to General Electric Company. Solid state lamp assembly. 3,676,668, Cl. 240-103.00r.
Collins Radio Company: *See—*
Melvin, William J., 3,676,654.
Colorado Business Development Corporation, mesne: *See—*
Whitney, Charles D., 3,675,576.
Colorado State University Research Foundation: *See—*
Story, Albert G., 3,675,769.
Coltex, S.L.: *See—*
Cama, Gerardo, 3,675,666.
Columbia Broadcasting System, Inc.: *See—*
Goldman, David A.; and Oppenheimer, Henry N., 3,676,850.
Columbia Broadcasting Systems, Inc.: *See—*
Gabor, Dennis, 3,676,732.
Columbia Controls Research Corporation: *See—*
Vaccaro, Angelo; and Dixon, Harold F. E., 3,676,644.
Combined Paper Mills, Inc.: *See—*
Spearin, Walter E.; and Vanderhei, Harold S., 3,676,184.
Combustion Engineering, Inc.: *See—*
Vigus, Cebron T., 3,675,915.
Commercial Electronics, Inc.: *See—*
Kline, Donald D., 3,676,587.
Commercial Solvents Corporation: *See—*
Schwoyer, William L., 3,676,234.
Commissariat a l'Energie Atomique: *See—*
Guernet, Georges, 3,676,693.
Lazzari, Jean-Pierre; and Melnick, Igor, 3,676,869.
Communications Satellite Corporation: *See—*
Simmons, William J., 3,676,803.
Compagnie Generale de Ceophysique: *See—*
Loeb, Julien M., 3,675,485.
Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Verdier, Henri, 3,675,700.
Compagnie International pour l'Informatique: *See—*
Lazzari, Jean-Pierre; and Melnick, Igor, 3,676,869.
Compare, Giampiero: *See—*
Kassabgi, Georges; and Compare, Giampiero, 3,676,746.
Compo Industries, Inc.: *See—*
Palm, William E., Jr., 3,676,250.
Compton, John W.: *See—*
Kaneko, Thomas M.; Schmolka, Irving R.; and Compton, John W., 3,676,354.
Compur-Werk Gesellschaft mit beschrankter Haftung & Co.: *See—*
Schwarz, Gerhard, 3,675,561.
Computer Industries, Inc.: *See—*
Towell, Le Roy Dean, 3,675,840.
Conch International Methane Limited: *See—*
Jackson, Robert G., 3,675,431.
Condas, George A.; and Brown, Don W., to United States of America, Atomic Energy Commission. Variable sensitivity visual displayer for infrared laser beams. 3,676,677, Cl. 250-83.30h.
Conenco International Limited: *See—*
Stinton, Frederick M.; and Slater, William M., 3,676,031.
Conklin, Cornelius Stephen, Jr.: *See—*
Lenkeit, Carl Heinz; and Conklin, Cornelius Stephen, Jr., 3,675,418.
Conrad, John Harold; Reynolds, Anthony Edward St. Aubyn; and Gadd, Edward George, to Solartron Electronic Group Limited, The. Jitter free trigger pulse generator. 3,676,707, Cl. 307-260.000.
Conradty, C.: *See—*
Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, 3,676,371.
Consalvo, Dante V.: *See—*
Ross, Thorvald S., Jr.; and Consalvo, Dante V., 3,675,810.
Consalvo, Dante V., assor to: *See—*
Ross, Thorvald S., Jr.; and Consalvo, Dante V., 3,675,810.
Consortium fur Elektrochemische Industrie GmbH: *See—*
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, 3,675,709.
Continental Can Company, Inc.: *See—*
La Rocca, James J.; and Bartolomeo, Blase J., 3,675,668.
Winkless, Robert A., 3,675,617.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Volmer, Edmund, 3,676,282.
Control Data Corporation: *See—*
Jones, David A., 3,676,710.
Control Research Products, Inc., mesne: *See—*
Hawryluk, Alexandra S.; and Hawryluk, John, 3,675,396.
Controls Company of America: *See—*
Biermann, William A., 3,675,892.
Cook, Graham Bramwell: *See—*
Kay, Leslie; Maginness, Maxwell Glynn; and Cook, Graham Bramwell, 3,675,472.
Cook, Kenneth L.: *See—*
Carder, Victor H.; and Cook, Kenneth L., 3,675,798.
Cooke, Albert Edward, to Trip-Lite Limited. Positive feed system for circular knitting machines. 3,675,446, Cl. 66-132.00t.
Cooling, Robert O.: *See—*
Samiran, David; Cooling, Robert O.; and Fitch, Melvin G., 3,675,645.
Cooper, Hugh S., to Cooper Metallurgical Corporation. Rust and heat resisting ferrous base alloys containing chromium and aluminum. 3,676,109, Cl. 75-124.000.
Cooper Metallurgical Corporation: *See—*
Cooper, Hugh S., 3,676,109.
Cooper Tire & Rubber Company: *See—*
Klose, Karl W., 3,675,520.
Cooper, William W., IV; and Shea, Edward M., to Abcor, Inc. Process for casting integrally supported tubular membranes. 3,676,193, Cl. 117-94.000.
Copeland, Clinton R.: *See—*
McLeod, Garth M.; Copeland, Clinton R.; and Rieger, Gilbert N., 3,675,287.
Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Domain logic arrangement. 3,676,871, Cl. 340-174.0tf.
Copine and said Corbellini assors. to Olaer Patent Company: *See—*
Mercier, Jacques H.; Copine, Fernand; and Corbellini, Carlo, 3,675,684.
Copine, Fernand: *See—*
Mercier, Jacques H.; Copine, Fernand; and Corbellini, Carlo, 3,675,684.
Copystatics Manufacturing Corporation: *See—*
Nordine, Richard, 3,676,691.
Corbellini, Carlo: *See—*
Mercier, Jacques H.; Copine, Fernand; and Corbellini, Carlo, 3,675,684.
Corcoran, Joseph D. Traction cradle appliance. 3,675,646, Cl. 128-75.000.

Cordes, Ronald A., to Esso Research and Engineering Company. Cyclones to lessen fouling. 3,675,401, Cl. 55-394.000.

Corless, Lee M., to B & J Manufacturing Company, mesne. Tire bead seating and inflation apparatus. 3,675,705, Cl. 157-1.100.

Coronelli, Carolina: *See—*
Thiemann, Josef; Murthy, Yelahanka K. S.; and Coronelli, Carolina, 3,676,490.

Corvetti, Patrick T. Work and safety lamp. 3,676,664, Cl. 240-6.40w.

Costello, Thomas V.: *See—*
Wohl, Charles J.; Schere, Jonathan L.; and Costello, Thomas V., 3,676,839.

Coster Tecnologie Speciali S.p.A.: *See—*
Ruscitti, Tomasco, 3,675,832.

Cote, Paul T.: *See—*
Watrous, Donald L.; and Cote, Paul T., 3,676,045.

Coughlin, Stephen A.: *See—*
Weaver, Galen K.; Shaffer, Howard A.; and Coughlin, Stephen A., 3,676,575.

Cowking, Charles Brian: *See—*
Linning, David Lees; and Cowking, Charles Brian, 3,676,296.

Cox, Irvin W., to Cambridge Thermionic Corporation. Process of making flocked plate structure for electric batteries. 3,676,253, Cl. 156-279.000.

Coyle, Jan Robert; and Stevens, Robert Walter. Capacitor energized channel stepping means for battery operated tape players. 3,676,609, Cl. 179-100.10r.

Crain, Philip W.: *See—*
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., 3,675,361.

Crane Packing Company: *See—*
Nappe, William D., 3,675,933.

Crane S.A.: *See—*
Avelines, Raymond Andre, 3,675,893.

Crawford, Duffer B.; and Norenburg, Johannes C., to Pullman Incorporated. Separation of low-boiling gas mixtures. 3,675,434, Cl. 62-23.000.

Crawford, John H.: *See—*
Russell, Phillips G.; Guggenbickler, Leon E.; and Crawford, John H., 3,675,791.

Crawford, Robert J., to Procter & Gamble Company, The. 4-(4-Methylcyclohex-3-en-1-yl)pent-4-en-1-ol and a process for its synthesis. 3,676,505, Cl. 260-631.500.

Crawford, Robert J., to Procter & Gamble Company, The. Synthesis of novel compounds useful for production of juvabione. 3,676,506, Cl. 260-631.500.

Creative Tool Company: *See—*
Berg, Louis L., 3,675,515.

Cremer, Walter, to Heinrich Koppers Gesellschaft mit beschrankter Haftung. Dust collector for a by-product coke oven. 3,676,305, Cl. 202-263.000.

Crookston, James R. Mobile trash cart. 3,675,940, Cl. 280-47.260.

Crosser, Orrin K.: *See—*
Schwaneke, Alfred E.; Falke, Wilbert L.; and Crosser, Orrin K., 3,675,310.

Crowe Manufacturing Company: *See—*
Durham, Nolan B., 3,675,974.

Crowley, Charles L.; Grosholz, James R.; and Hutter, Charles G., III, to Air-Shields, Inc. Wound drainage equipment. 3,675,653, Cl. 128-278.000.

Cubic Corporation: *See—*
Neumann, Malcolm A.; and Hunsberger, Arnold, 3,675,378.

Cuda, Charles H. Timed variable output pump. 3,675,498, Cl. 74-55.000.

Cumbo, Charles Carmen: *See—*
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., 3,676,477.

Cummings, John P.; and Berg, Richard E., to Honeywell, Inc. Electrochemical oxygen demand system. 3,676,321, Cl. 204-195.00r.

Custom Tool & Machine Co., Inc.: *See—*
Nelson, Leonard; and Wilson, Thomas, 3,676,120.

Cybersol, Inc., mesne: *See—*
Reynolds, Beverly L., 3,676,553.

Cynober, Simon: *See—*
Wiart, Albert; and Cynober, Simon, 3,675,585.

Daane, Robert A., to Beloit Corporation. Dryer drum. 3,675,337, Cl. 34-41.000.

Daikin Kogyo Co., Ltd.: *See—*
Wada, Hiroyuki; and Sonoyama, Heikitsu, 3,676,491.

Dale, Ernest A.; and Thomas, Martha J. B., to Sylvania Electric Products, Inc. Atomizing, spray-drying and flame process for manufacturing phosphors. 3,676,358, Cl. 252-301.40p.

D'Alelio, Gaetano F., to PPG Industries, Inc. Polymerizable crosslinkable esters of polyepoxy compounds. 3,676,398, Cl. 260-47.0ep.

Dalson, Milton H.; Gallagher, James P.; and Pfefferle, William C. Reforming with five platinum rhenium catalyst beds. 3,676,328, Cl. 208-65.000.

Dalson, Milton H.; and Pfefferle, William C. Reforming with four or five platinum rhenium catalyst beds. 3,676,329, Cl. 208-65.000.

Dalton, John Junior: *See—*
Quint, Stephen Mark; and Dalton, John Junior, 3,676,196.

Dalton, John Vincent; and Labuda, Edward Franklin, to Bell Telephone Laboratories, Incorporated. Diode-array target including isolating low resistivity regions. 3,676,727, Cl. 313-66.000.

D'Amato, Michael J.: *See—*
Gartland, Albert J., Jr.; and D'Amato, Michael J., 3,676,829.

Danchenko, Mikhail Evgenievich: *See—*
Esiban, Eduard Migranovich; and Danchenko, Mikhail Evgenievich, 3,676,639.

Dane, Ernest Blaney, Jr. Scraper bucket apparatus for deep sea mining systems. 3,675,348, Cl. 37-69.000.

Danielmeyer, Hans Guenter, to Bell Telephone Laboratories, Incorporated. Frequency stabilized laser. 3,676,799, Cl. 331-94.500.

Danzker, Zarul I. Swimming pool construction. 3,675,253, Cl. 4-172.190.

Dao, James; and Yew, Nelson C., to ETEC Corporation. Electron gun biasing system. 3,676,670, Cl. 250-49.50a.

Datta, Ranajit Kumar, to General Electric Company. Ternary alkaline-earth pyrosilicate luminescent materials activated with divalent europium. 3,676,361, Cl. 252-301.40f.

Davenport, Arthur B., to Sperry Rand Corporation. Sweep and gate generator. 3,676,697, Cl. 307-228.000.

Davidson, Donald J.: *See—*
O'Connor, Maurice J.; and Davidson, Donald J., 3,675,676.

Davidson, Kenneth H.; and Morris, Carrol V., to Snorkel Fire Equipment Company. Fire fighting apparatus with telescoping boom. 3,675,721, Cl. 169-24.000.

Davie, William R., to Porter Pain Co., mesne. Method of preparing antifoulant coating compositions and resulting product. 3,676,388, Cl. 260-28.

Davies, Everett H., to Barber-Colman Company. Extensible cable structure. 3,676,572, Cl. 174-69.000.

Davis, James E. Electro-mechanical educational apparatus. 3,675,340, Cl. 35-9.00d.

Davis, Quinton C., IV. Water surface depth instrument. 3,675,483, Cl. 73-327.000.

Davy and United Engineering Company Limited: *See—*
Sturdy, Clifford, 3,675,789.

Dawson, James A., to McDonnell Douglas Corporation. Coupling fitting for connecting two pipes. 3,675,949, Cl. 285-354.000.

Dawson, Ralph E.; and Mahaffey, Donald M., to United States of America, Army, mesne. Process for the separation of HMX from mixtures comprising RDX and HMX. 3,676,425, Cl. 260-239.0hm.

Daxer, Hilmar: *See—*
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, 3,675,709.

Day, John W. Bolo clasp. 3,675,277, Cl. 24-49.00s.

DCA Food Industries Inc.: *See—*
Fischer, Leonard G.; and Wong, Philip, 3,676,158.

De Beaulieu, Henry Philippe: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, 3,676,546.

De Boer, Eeltje, to U.S. Philips Corporation. Two register parallel binary adder/subtracter. 3,676,657, Cl. 235-175.000.

de Gelder, Jacob; and Phillips, Gary E., to Mattel, Inc. Doll display stage with movable doll support. 3,675,362, Cl. 46-13.000.

De Haes, Louis Maria, to Agfa-Gevaert. Method of producing planographic printing plates. 3,676,125, Cl. 96-33.000.

De Kanter, Hendrik, to De Kanter-American Quality. Disposable thermometer. 3,675,501, Cl. 73-358.000.

De Kanter-American Quality: *See—*
De Kanter, Hendrik, 3,675,501.

De La Rue Instruments Limited: *See—*
Sels, Victor Richard, 3,675,386.

De Lange, Owen Edward, to Bell Telephone Laboratories, Incorporated. Frequency-division multiplex communication system. 3,676,684, Cl. 250-199.000.

De Neef, John G.: *See—*
Lanoue, Thomas J.; and De Neef, John G., 3,676,579.

De Pauw, Alfons Jozef: *See—*
Carpentier, Jan Albert; and De Pauw, Alfons Jozef, 3,676,142.

De Ritter, Elmer; and Raymond, Joseph Edward, to Hoffman-La Roche Inc. Method of stabilizing niacinamide against caking. 3,676,556, Cl. 424-266.000.

De Rossi, Frank, to Dexter Corporation, The. Coating compositions for polyolefin substrates. 3,676,391, Cl. 260-33.6ua.

De Shazo, James Derwin: *See—*
Seale, Virgil L.; Moreland, Billy Ray; and De Shazo, James Derwin, 3,676,501.

De Weese, Duane G.; and Hanck, Ronald C., to SCM Corporation. Edible comestibles and process for making same. 3,676,148, Cl. 99-1.000.

Deabon, James S. Method and apparatus for removing entrained dust particles from a gaseous stream. 3,675,397, Cl. 55-227.000.

Decatur Iron and Steel Company: *See—*
Lentz, Tommy L.; and Terry, Alton L., 3,675,369.

Dechenne, Roger: *See—*
Boel, Michel; and Dechenne, Roger, 3,676,413.

Dedrick, Dallas S., to Weyerhaeuser Company. Method for drying wood. 3,675,336, Cl. 34-9.500.

Deep Oil Technology, Inc.: *See—*
Walker, Raymond W., 3,675,514.

Deering Milliken Research Corporation: *See—*
Eschenbach, Paul W., 3,675,864.
Eschenbach, Paul W., 3,675,865.
Young, William O., Jr.; and Quattlebaum, Walter J., 3,675,836.
Young, William O., Jr.; and Quattlebaum, Walter J., 3,676,251.

Degener, Eberhart: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.

Degginger, Edward R., to Allied Chemical Corporation. Fire retarding process comprising converging separate solutions of polyvinyl alcohol and alkali metal borate. 3,676,169, Cl. 117-3.000.

Dehm, Henry C.; and Mellow, Dale F., to Hercules Incorporated. Method of preparing propellant charges from fibrous nitrocellulose. 3,676,533, Cl. 264-3.00c.

Deibert, Max C., to Monsanto Research Corporation. Conductive carbon membrane electrode. 3,676,222, Cl. 136-121.000.

Del Ross, Sergio: *See—*
Ciuti, Brunello; and Del Ross, Sergio, 3,676,357.

Delavan Manufacturing Co.: *See—*
Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., 3,676,020.

Delta Exploration Company, Inc.: *See—*
Bays, Marvin G., 3,676,840.

Dempco, Inc.: *See—*
Vik, Albam M., 3,675,939.

Denbigh, Keith Warwick: *See—*
Capp, Clifford William; and Denbigh, Keith Warwick, 3,676,431.

Denki Onkyo Co., Ltd.: *See—*
Masuda, Noboru; and Koba-ashi, Tunekazu, 3,676,828.

Dennison, John J., to Arrow-Hart, Inc. Integrated lighted push button switch device. 3,676,630, Cl. 200-168.00k.

Denovan, John J.; and Kurelek, John, to Koehring-Waterous, Ltd. Tree harvesting apparatus. 3,675,691, Cl. 144-3.00d.

Denton, John L. Machine for harvesting and cleaning nuts and the like. 3,675,405, Cl. 56-328.00r.

Depoorter, Henri: *See—*
Poot, Albert Lucien; Van Besauw, Jan Frans; and Depoorter, Henri, 3,676,133.
Poot, Albert Lucien; and Depoorter, Henri, 3,676,138.
Poot, Albert Lucien; and Depoorter, Henri, 3,676,140.

Depoorter, Henri; and Ghys, Theofiel Hubert, to Agfa-Gevaert. Spectral sensitization of photoconductive compositions. 3,676,119, Cl. 96-1.700.

Der Marderosian, Aaron C.: *See—*
Caccamesi, Vincent C.; and Der Marderosian, Aaron C., 3,675,468.

Des Jardins, Joseph A., to AMF Incorporated. Anti-spring buckling device. 3,675,912, Cl. 267-166.000.

Desmarets, Paul Jules Rene Joseph. Arrangement for rendering detachable the intermediate parts of a fitted dental prosthesis or the fixed intermediate parts of a partially removable and irremovable prosthesis of dolder bar type. 3,675,326, Cl. 32-5.000.

DeSoto, Inc.: *See—*
Sekmakas, Kazys, 3,676,312.

Detrex Chemical Industries Inc.: *See—*
Black, Charles A., 3,676,307.

Deutsch Advance Produktion GmbH: *See—*
Eggensperger, Heinz; Franzen, Volker; and Kloss, Wilfried, 3,676,471.

Deutsche Babcock & Wilcox Aktiengesellschaft: *See—*
Dorschel, Jurgen, 3,675,607.

Deutschman, John Edward: *See—*
Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, 3,676,105.

Devanney, Raymond H., to Veeder Industries Inc. Variator. 3,675,848, Cl. 235-61.00m.

Devlin assor. to said Henc: *See—*
Henc, Edward V.; and Devlin, Edmund F. X., 3,675,918.

Devlin, Edmund F. X.: *See—*
Henc, Edward V.; and Devlin, Edmund F. X., 3,675,918.

Devyatkin, Vladimir Nikolaevich: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Dexter Automatic Products Co., Inc.: *See—*
Tupper, Willis E.; and Hanson, John R., 3,676,026.

Dexter Corporation, The: *See—*
De Rossi, Frank, 3,676,391.

Dexter, Martin: *See—*
Spivack, John D.; and Dexter, Martin, 3,676,531.

Di Mino, Alfonson, to ADM Tronics. Electronic trimming of microelectronic resistors. 3,676,633, Cl. 219-69.00c.

Dibble, Douglas D. Wall shelf mounting. 3,675,882, Cl. 248-235.000.

Didier-Werke A.G.: *See—*
Mahler, Ernst, 3,676,162.

Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for polymerizing α-olefins. 3,676,414, Cl. 260-88.200.

Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for polymerizing α-olefins. 3,676,415, Cl. 260-88.200.

Dietz, John W., to Du Pont de Nemours, E. I., and Company. Amorphous boron-silicon-nitride materials. 3,676,343, Cl. 252-25.000.

Dietz, Wolfgang: *See—*
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, 3,675,709.

Digital Security Systems, Inc.: *See—*
Bourke, Edgar R., II; and Snow, Robert C., 3,675,816.

Disa Elektronik A/S: *See—*
Christensen, Orla, 3,676,320.

Dixon, Harold F. E.: *See—*
Vaccaro, Angelo; and Dixon, Harold F. E., 3,676,644.

Dixon, Paul H. Automatic assembly machine. 3,675,302, Cl. 29-211.000.

Dluhy, Herbert, to American Export Isbrandtsen Lines, Inc. Shipping container with racks for supporting vehicles therein. 3,675,795, Cl. 214-16.1cc.

Dmitrenko, Vladimir Ilich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Dobbelstein, Arnold; Hille, Hans-Dieter; and Momm, Anneliese Geb. Koziokek, to Herberts, Kurt, Dr., & Co. vorm. Otto Louis Herberts. Process for the production of insulating coatings on electric conductors. 3,676,403, Cl. 260-75.

Dobbins, David L.: *See—*
Mayer, George L., Jr.; and Dobbins, David L., 3,676,000.

Dobroskokov, Anatoly Lukich: *See—*
Zhukovsky, Alexandr Ivanovich; Dobroskokov, Anatoly Lukich; and Orlovsky, Vasily Ivanovich, 3,675,772.

Dodge, James B.: *See—*
Aisenberg, Sol; and Dodge, James B., 3,675,451.

Doering, William Von E.; Farrissey, William J., Jr.; and Frulla, Floro F., to Upjohn Company, The. Process for preparing hydroquinones. 3,676,503, Cl. 265-621.00h.

Doerrfeld, Robert E.: *See—*
Hansen, John A.; and Doerrfeld, Robert E., 3,675,959.

Doherty, Edward T.: *See—*
Burckhardt, Christoph B.; and Doherty, Edward T., 3,676,130.

Dohmann, Fritz. Method for manufacturing bevel gears. 3,675,459, Cl. 72-352.000.

Dohr, Manfred: *See—*
Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, 3,676,338.

Dolansky, Ladislav; and Phillips, Nathan D., to Research Corporation. Voiced sound display. 3,676,595, Cl. 179-1.0vs.

Dolganov, Kint Evgenievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Dollinger, Robert E., to Phillips Petroleum Company. Carbon black manufacture. 3,676,168, Cl. 106-307.000.

Dolomont, Allan A., to Olin Mathieson Chemical Corporation. Aluminum welding wire electrode with an alumina coating containing phosphate. 3,676,309, Cl. 204-27.000.

Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, to Hajtomu-es Felvonogyar. Method for coating metal workpieces with water soluble or colloidal coloring matter emulsified in water. 3,673,316, Cl. 204-181.

Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, to Hajtomu-es Felvonogyar. Method for coating metal workpieces with water soluble or colloidal coloring matter emulsified in water. 3,676,316, Cl. 204-181.

Domyan, Fra· · F.; Lantz, Joseph C.; and Sibley, Richard D. Diving helmet. 3,675,650, Cl. 128-142.700.

Domyan, Frank Francis: *See—*
Keller, William Fredrick; and Domyan, Frank Francis, 3,675,538.

Donato, Anthony C., to Lightolier Incorporated. Multiple access electric power distribution assembly. 3,676,830, Cl. 339-21.00r.

Donlon, Richard H.: *See—*
Sobey, Albert J.; and Donlon, Richard H., 3,675,583.

Donofrio, Nicholas M.; and Pomeranz, Jehoshua N., to International Business Machines Corporation. Monolithic memory sense amplifier/bit driver. 3,676,704, Cl. 307-235.000.

Dore, James E.: *See—*
Wieser, Peter F.; and Dore, James E., 3,676,111.

Dorken & Mankel KG, Firma: *See—*
Jentsch, Dietrich, 3,675,270.

Dorn, Ludwig: *See—*
Podschus, Ernst; Dorn, Ludwig; and Heinze, Gerhard, 3,676,366.

Dorn, Peter: *See—*
Morris, Herbert C.; and Dorn, Peter, 3,676,089.

Dorn, Rolf K.; and Williams, Theodore S., to Lummus Company, The. Quench process. 3,676,519, Cl. 260-683.000.

Dorschel, Jurgen, to Deutsche Babcock & Wilcox Aktiengesellschaft. Method and apparatus for controlling depth of submergence of an underwater vehicle. 3,675,607, Cl. 114-16.00r.

Doss, Richard C.; and Jones, Faber B., to Phillips Petroleum Company. Adhesive coated vinyl chloride film. 3,676,201, Cl. 117-122.00h.

Dotson, Donald A.: *See—*
Roberts, George C.; and Dotson, Donald A., 3,675,774.

Douglas, Gary D.; and Eaves, Billy J., to Phillips Petroleum Company. Apparatus for testing and detonating blasting caps. 3,675,578, Cl. 102-70.200.

Douglas, James B. Tablet arm assembly for seats. 3,675,968, Cl. 297-162.000.

Douglas, Raymond J.: *See—*
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., 3,675,361.

Douglass, Carl E. Engine stand. 3,675,914, Cl. 269-55.000.

Dover Corporation, mesne: *See—*
Bernard, Arthur A.; and Bernard, Richard A., 3,676,640.
Dow Chemical Company, The: *See—*
Clarke, James A., 3,676,397.
Heiman, John C., 3,676,509.
Parrish, Donald Bob; and Pruitt, Ronnie Mac, 3,676,379.
Symm, Richard H., 3,676,054.
Tsai, James H.; and Anderson, Glenn H., 3,676,474.
Dow Corning Limited: *See—*
Fulton, Michael; Jones, John Darrell; and Pearce, Christopher A., 3,676,420.
Down, Russell J. Method for growing oysters. 3,675,626, Cl. 119-4.000.
Downing, Arthur C., to General Electric Company. Steam iron and valve structure. 3,675,351, Cl. 38-77.830.
Doyle, William C., Jr., to Gulf Research & Development Company. Method of manufacturing allyl N,N-dialkylthiolcarbamates. 3,676,479, Cl. 260-455.00a.
Drachenberg, Werner: *See—*
Helmut, Werner; Frank, Dieter; and Drachenberg, Werner, 3,676,245.
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, to United Gas Industries Limited. Meter reading units. 3,676,876, Cl. 340-188.000.
Drapen, Myron E.; and Henry, Ormond Lee. Polishing device. 3,675,330, Cl. 32-59.000.
Drathschmidt, Carl J. Instant operating coilless relay. 3,676,816, Cl. 337-134.000.
Dressel, William G.: *See—*
Germain, Andrew G.; and Dressel, William G., 3,675,518.
Drinkard, William C., Jr.; and Lindsey, Richard V., to Du Pont de Nemours, E. I., and Company. Hydrides of nickel coordination compounds. 3,676,475, Cl. 260-439.00r.
Driver, Michael C.; and Geisler, Martin J., to Westinghouse Electric Corporation. Process for producing self aligned gate field effect transistor. 3,675,313, Cl. 29-571.000.
Drucker, Kenneth G., to Bio-Consultants, Inc. High speed centrifuge drive assembly. 3,676,723, Cl. 310-68.00b.
Drucker, Kenneth Gus, to Bio-Consultants, Inc. Continuous flow centrifuge head construction. 3,675,846, Cl. 233-26.000.
Drummond, Warren W., to PPG Industries, Inc. Glass fiber forming and supply package. 3,675,872, Cl. 242-174.000.
Drutchas, Gilbert H.; and Clark, Hubert M., to TRW Inc. Full power braking system with skid control and redundant power steering. 3,675,422, Cl. 60-54.50p.
Du Pont de Nemours, E. I., and Company: *See—*
Akers, Richard L.; and Oplinger, Donald W., 3,675,863.
Anderson, Terry P.; and Parker, Fred W., 3,676,377.
Chay, Dong M.; and Iler, Ralph K., 3,676,086.
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., 3,676,477.
Chia, Yuan-Tsan, 3,676,481.
Coates, John Stuart, 3,676,364.
Dietz, John W., 3,676,343.
Drinkard, William C., Jr.; and Lindsey, Richard V., 3,676,475.
Dyk, John W.; and Wu, Dao-Tsing, 3,676,172.
Graves, Irving Stuart, 3,676,273.
Hoeschele, Guenther Kurt, 3,676,495.
James, Daniel S., 3,676,050.
Knowles, Richard N., 3,676,562.
Kohan, Melvin I.; Martin, Wayne H.; and Rosenbaum, Chester K., 3,676,400.
Kowalewski, Alexander Joseph, 3,676,181.
Mantell, Gerald J.; and Rondestvedt, Christian S., Jr., 3,676,500.
McBride, Richard T., 3,676,566.
Randolph, Michael J., 3,676,476.
Sands, Seymour, 3,676,280.
Schmidt, Paul Gordon, 3,675,875.
Walus, Aloysius N., 3,676,385.
Werner, Alfred John, 3,676,167.
Yates, Paul C., 3,676,161.
Yates, Paul C., 3,676,362.
Dubernet, Robert; and Sabatie, Michele, to Societe Nationale Industrielle Aerospatiale. Multiconductor stranded remote-control cable. 3,676,576, Cl. 174-113.00r.
Ducamus, Jean Matital; and Fernandez, Claude-Jane, to U.S. Philips Corporation. Four-phase delay element. 3,676,709, Cl. 307-279.000.
Duck, Edward William; Ridgewell, Brian John; and Locke, John Michael, to International Synthetic Rubber Company Limited, The. Co- and terpolymers of alpha olefins with cyclo propane derivatives. 3,676,409, Cl. 260-80.780.
Dudley, James M. Hanger for sheet material. 3,675,782, Cl. 211-50.000.
Dudley, Leslie Peter, to Dudley Optical Laboratories, Inc. Methods of integral photography. 3,675,553, Cl. 95-18.00p.
Dudley Optical Laboratories, Inc.: *See—*
Dudley, Leslie Peter, 3,675,553.
Duennenberger, Max: *See—*
Biland, Hans Rudolf; and Duennenberger, Max, 3,676,494.
Duffy, William B., to TRW Inc., mesne. Sheet metal panel fastener. 3,675,958, Cl. 287-189.36d.
Duggar, Anderson, Jr. Speed reducer. 3,675,510, Cl. 74-801.000.
Duling, Irl N.: *See—*
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,676,521.
Duncan, James D.: *See—*
Klima, Frank J.; and Duncan, James D., 3,676,236.
Duncan, Robert C.: *See—*
Baker, Joseph S.; Marsan, Mario S.; and Duncan, Robert C., 3,675,654.
Dunham-Bush, Inc.: *See—*
Lambert, Kenneth W.; and Krichbaum, Donald W., 3,675,379.
Dupnock, Andrew; Gorey, Edward F.; and Keenan, William A., to International Business Machines Corporation. Method for measuring resisitivity. 3,676,775, Cl. 324-64.000.
Dupont, Eugene F.: *See—*
Stangarone, Gene; Cassara, Frank A.; and Dupont, Eugene F., 3,675,615.
Durckbeimer, Walter: *See—*
Schorr, Manfred; Durckbeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,676,446.
Durham, Charles Edward, to Clenaglass Electric Washer Limited. Brushes for cleaning glasses and other drinking vessels. 3,675,263, Cl. 15-76.000.
Durham, Nolan B., 1/2 to Crowe Manufacturing Company. Dual wheel assembly and clamp therefor. 3,675,974, Cl. 301-13.0sm.
DuRocher, Gideon A., to Essex International, Inc. Thermally sensitive controls for electric circuits. 3,676,815, Cl. 337-140.000.
Dutcher, Daniel P., to Hoerner Waldorf Corporation. Covered tray package. 3,675,764, Cl. 206-45.340.
Duwel, Dieter: *See—*
Schorr, Manfred; Durckbeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,676,446.
Dwyer Instruments, Inc.: *See—*
Phillips, James W., 3,675,481.
Dyk, John W.; and Wu, Dao-Tsing, to Du Pont de Nemours, E. I., and Company. Vapor coalescence of powder coatings. 3,676,172, Cl. 117-21.000.
Dynes, Robert Carr: *See—*
Anderson, Philip Warren; Dynes, Robert Carr; and Fulton, Theodore Alan, 3,676,718.
Eagle Range & Manufacturing Company: *See—*
Vocke, Elmer E.; and Baltz, Albert L., 3,676,643.
Eagle Range and Manufacturing Company: *See—*
Baltz, Albert L.; and Voeke, Elmer E., 3,675,638.
Eagle-Picher Industries, Inc.: *See—*
Logan, Robert P., 3,676,281.
Eastman, Hal P., to International Business Machines Corporation. Information retrieval system and method. 3,676,851, Cl. 340-172.500.
Eastman Kodak Company: *See—*
Boyer, Simone L.; and Caridi, Roger, 3,676,147.
Garth, Leonid G., 3,676,183.
Henry, James William, 3,676,401.
Lewis, Alan E.; and Voight, Frederick W., Jr., 3,676,485.
Mowrey, Rowland G., 3,676,136.
Musliner, Walter J., 3,676,135.
Pagel, Armin B., 3,675,565.
Wright, John F.; and Olson, James R., 3,676,350.
Eaton Corporation: *See—*
Obermaier, Frank E., 3,675,681.
Eaves, Billy J.: *See—*
Douglas, Gary D.; and Eaves, Billy J., 3,675,578.
Ebeling, Dorothy Stott: *See—*
Ebeling, William C., 3,675,993.
Ebeling, William C.; deceased (by Ebeling, Dorothy Stott; executrix). Visual system. 3,675,993, Cl. 352-92.000.
Ebert, Herman G. Reactively driven rotary liquid distributor. 3,675,850, Cl. 239-254.000.
Eby, Richard L.: *See—*
Sharaf, Harold M.; and Eby, Richard L., 3,676,770.
Eckhardt, Hans A. Apparatus for processing plastic materials. 3,676,035, Cl. 18-12.0sm.
Eckhardt, Hans A. Apparatus for detecting electrically conductive particles using a gas permeable, but liquid impermeable surface. 3,676,773, Cl. 324-41.000.
Ecodyne Corporation: *See—*
O'Brien, Dennis M.; and Miller, Cole R., 3,676,336.
Edco Corporation: *See—*
Wohl, Charles J.; Schere, Jonathan L.; and Costello, Thomas V., 3,676,839.
Edelson, Leo: *See—*
Oddsen, Trygve R.; Oddsen, Gustav A.; and Edelson, Leo, 3,675,597.
Edgar, D. Brown, Jr., to General Electric Company. Lubricating compositions containing halogen and alkoxy, acyloxy, or hydroxy groups. 3,676,349, Cl. 252-54.600.
Edwards, Harry, to Imperial Chemical Industries Limited. Manufacture of laminated articles. 3,676,265, Cl. 156-500.000.
Edwards, James B.; and Haug, Warren R., to Procter & Gamble Company, The. Unleavened, fine grain high volume layer cake mix. 3,676,152, Cl. 99-94.000.
Efremidi, Anatoly Lazarevich: *See—*
Saralidze, Anton Lavrentievich; and Efremidi, Anatoly Lazarevich, 3,676,762.
Egge, Heinz: *See—*
Zilliken, Frederick William; and Egge, Heinz, 3,676,472.
Eggensperger, Heinz; Franzen, Volker; and Kloss, Wilfried, to Deutsch Advance Produktion GmbH. 4-(Betahydroxyethoxy-2-hydroxybenzophenones) and esters thereof. 3,676,471, Cl. 260-410.500.
Eichel, Herman J.: *See—*

Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., 3,676,559.

Einthoven, Willem Gerard; Jetter, Evelyn Speter; and Wheatley, Carl Franklin, Jr., to RCA Corporation. Method for making transistors including base sheet resistivity determining step. 3,676,229, Cl. 148-186.000.

Elam, Richard C.: *See—*
Evans, Dennis J.; and Elam, Richard C., 3,676,085.

Elazar, Shmuel: *See—*
Funfstuck, Horst; and Elazar, Shmuel, 3,675,643.

Electro Medical Systems, Inc.: *See—*
Sittner, Weldon Rex, 3,675,655.

Electronic Assistance Corporation: *See—*
Mitchell, Chauncey L., III, 3,675,859.

Elizer, Lee H., to Hubinger Company, The. Textile treatment with amphoteric starch. 3,676,205, Cl. 117-139.50c.

Elizer, Lee H., to Hubinger Company, The. Amphoteric cellulose and process for the preparation thereof. 3,676,423, Cl. 260-212.000.

Ellis, Alan F., to Gulf Research & Development Company. Process for preparing organic acids. 3,676,473, Cl. 260-413.000.

Ellis, Alan F.; Kresge, Alfred N.; and Seekircher, Richard, to Gulf Research & Development Company. Process for producing organic acids. 3,676,489, Cl. 260-533.00r.

Ellison, William C. Machine for cutting rolls of sheet material. 3,675,525, Cl. 83-629.000.

Ellsworth, Robert L.: *See—*
Hinkley, David F.; and Ellsworth, Robert L., 3,676,482.

Elo, Arpad, Jr.; and Broersma, Frank R., to Nalco Chemical Company. Process for preparing synthetic crystalline zeolitic sodium aluminosilicate. 3,676,063, Cl. 23-113.000.

Empire Products, Inc., mesne: *See—*
Newman, Albert P., 3,676,837.

Empire Tool Company: *See—*
Girardin, Howard N., 3,675,291.

Enabnit, Robert S.; and Wolfe, Merritt W., to Goodyear Tire & Rubber Company, The. Method for measuring the thickness of buffed tires. 3,675,375, Cl. 51-281.00r.

Endo Laboratories, Inc.: *See—*
Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, 3,676,557.

Engine Power Corporation: *See—*
Silverstein, Joseph J., 3,676,381.

English, Alan Taylour; and Turner, Paul Anthony, to Bell Telephone Laboratories, Incorporated. Technique for enhancing the stability of transition metal-gold thin film composites. 3,676,214, Cl. 117-217.000.

Enterprise Machine and Development Corporation: *See—*
Taylor, Lewis A., 3,675,623.

Entwisle, John Hubert: *See—*
Smith, Frank; and Entwisle, John Hubert, 3,676,325.

Envirometrics, Inc., mesne: *See—*
Feldman, Stephen Lew, 3,675,480.

Envirotech Corporation, mesne: *See—*
Zuckerman, Mathew M.; and Molof, Alan H., 3,676,334.

Epoch Company, Ltd.: *See—*
Matsumoto, Teruo, 3,675,341.

Eppler, Richard Andrew, to SCM Corporation. Composition and process for glazing ceramic ware. 3,676,204, Cl. 117-125.000.

Equipment Sales Company, Inc.: *See—*
McKinnon, Benjamin I., 3,675,303.

Erlichman, Irving: *See—*
Land, Edwin H.; and Erlichman, Irving, 3,675,551.

Erlinder, Atwood E. Lift having self-folding platform. 3,675,739, Cl. 187-1.000.

Ernst, Alfons; and Hofling, Rudolf, to Heidenhain, Johannes, Dr. Apparatus for the measurable displacement of an object. 3,675,331, Cl. 33-1.00m.

Eschenbach, Paul W., to Deering Milliken Research Corporation. Yarn package and apparatus for producing same. 3,675,864, Cl. 242-47.000.

Eschenbach, Paul W., to Deering Milliken Research Corporation. Apparatus for increasing the density of yarn packages. 3,675,865, Cl. 242-47.000.

Esiban, Eduard Migranovich; and Danchenko, Mikhail Evgenievich, to Institut Elektrosvari imeni E. O. Patona. Non-consumable electrode for electric-arc process. 3,676,639, Cl. 219-121.00r.

Essex International, Inc.: *See—*
DuRocher, Gideon A., 3,676,815.
Hartz, Marvin E.; Taormina, Anthony J.; and Grebik, Stephen J., 3,676,838.
Reust, Paul H.; and Taube, Donald R., 3,675,300.

Esso Production Research Company: *See—*
Kanady, William E., 3,675,718.
Willman, Bertram T., 3,675,429.

Esso Research and Engineering Company: *See—*
Cordes, Ronald A., 3,675,401.
Foroulis, Zisis Andrew, 3,676,327.
Gathman, Albert; and Gleim, George W., 3,676,342.
Hu, Shih-en, 3,676,346.
Hu, Shih-En, 3,676,483.
Prentice, James S., 3,676,242.
Winkler, John C.; and Senyard, Corley P., 3,676,412.

Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Bonnet, Maurice, 3,675,554.
Vulmiere, Jacques Claude; and Vulmiere, Huguette Nelly, 3,675,984.

Etablissements Public: Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Moczar, Madeleine Csanadi; Moczar, Elemer; and Payrau, Paul Bertrand, 3,676,298.

Etablissements Tiflex: *See—*
Leopold, Henri; and Pomathios, Jacques, 3,676,128.

ETEC Corporation: *See—*
Dao, James; and Yew, Nelson C., 3,676,670.

Ethyl Corporation: *See—*
Stephens, Ruth E., 3,676,370.
Unick, Alvin J.; and Gault, Kenneth W., 3,676,348.

Eto, Kiyomitsu: *See—*
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, 3,676,541.

Ets. Carpano & Pons: *See—*
Laszlo, Nicolar, 3,675,937.

Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., to Avent Industries, Inc. Silverware sorting means. 3,675,770, Cl. 209-97.000.

Eulenberg, Hannspeter; and Van Veldhoven, Gerardus Antonius Wilhelmus, to U.S. Philips Corporation. Circuit arrangement for generating a line frequency parabolically modulated sawtooth current of field frequency through a field deflection coil. 3,676,733, Cl. 315-27.0gd.

Eutectic Welding Alloys Corporation: *See—*
Wishnie, Frederick T., 3,676,310.

Evans, David Maurice; and Theodore, Roy, to S & C Electric Company. Switch construction with non-bounce contacts. 3,676,629, Cl. 200-166.00e.

Evans, Dennis J.; and Elam, Richard C., to United Aircraft Corporation. Cobalt base coating for the superalloys. 3,676,085, Cl. 29-194.000.

Everflex Products, Inc.: *See—*
Morin, Louis F., 3,675,951.

EVG Entwicklungs-und Verwertungsgesellschaft m.b.H.: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, 3,676,631.
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, 3,676,632.

Ewers, Ronald L., to Game Time, Inc. Rubber spring supported playground apparatus. 3,675,919, Cl. 272-54.000.

Exact Electronics, Inc.: *See—*
Hunter, Lloyd Wayne, 3,676,698.

Exact Weight Scale Corporation: *See—*
Koppe, Robert G., 3,675,759.

Fabique d'Horlogerie Ch. Tissot & Fils S.A.: *See—*
Cachelin, Gerard, 3,675,414.

Fabrica d'Armi P. Beretta S.p.A.: *See—*
Beretta, Pier Carlo, 3,675,534.

Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,675,854.

Fahey, Darryl R., to Phillips Petroleum Company. Ortho-chlorination of azobenzene. 3,676,421, Cl. 26-205.000.

Fairbanks, Theodore H., to FMC Corporation. Apparatus for making cellular structures. 3,676,267, Cl. 156-523.000.

Falk, Fred W. Absorbed ionizing radiation measuring device. 3,676,682, Cl. 250-83.600.

Falke, Wilbert L.: *See—*
Schwaneke, Alfred E.; Falke, Wilbert L.; and Crosser, Orrin K., 3,675,310.

Fall, Harry H., to Goodyear Tire & Rubber Company, The. Curable graft polymers of polyalkylene oxides. 3,676,529, Cl. 260-887.000.

Fallowfield, Derek, to Grace, W. R., & Co. Thermoformed reusable package having a reclosable lid. 3,676,159, Cl. 99-174.000.

Falvo, Louis A.: *See—*
Hoppstock, Frederic H.; Falvo, Louis A.; and Frech, Kenneth J., 3,676,518.

Farbenfabriken Bayer Akteingesellschaft: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Podschus, Ernst; Dorn, Ludwig; and Heinze, Gerhard, 3,676,366.
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, 3,676,544.
Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, 3,676,555.
Wolf, Gerhard D.; Blankenstein, Gunter; and Nischk, Gunter, 3,676,525.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,414.
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,415.
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.
Schorr, Manfred; Durckbeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,676,446.

Farkas, Elizabeth H.: *See—*
Glicksman, Martin; Farkas, Elizabeth H.; and Carter, Sadie,, 3,676,150.

Farmer, Robert F., III; and Lawson, Jimmie B., to Shell Oil Company. Heat-stable calcium-compatible waterflood surfactant. 3,675,716, Cl. 166-275.000.

Farrissey, William J., Jr.: *See—*
Doering, William Von E.; Farrissey, William J., Jr.; and Frulla, Floro F., 3,676,503.

Fattor, Arthur P.; and Hortensius, William. Devices for drawing wires through conduits. 3,675,898, Cl. 254-134.3ft.

Faulk, Joseph H.; Kern, Loyd R.; and King, Graham E., to Atlantic Richfield Company. Slim hole drilling. 3,675,728, Cl. 175-57.000.

Faulring, John A.: *See—*
Faulring, Merle E.; and Faulring, John A., 3,676,779.

Faulring, Merle E.; and Faulring, John A. Signal device. 3,676,779, Cl. 325-115.000.

Fawcett Printing Corporation, The: *See—*
McKinney, Paul W., 3,676,040.

Federal-Mogul Corporation: *See—*
Le Brasse, Gordon J.; and Stolarski, Boniface, 3,676,103.

Fefferman, Gerald Burt, to Bell Telephone Laboratories, Incorporated. Technique for the fabrication of a photolithographically definable, glass covered gold conductor pat'ern. 3,676,087, Cl. 29-195.00g.

Feldman, Stephen Lew, to Envirometrics, Inc., mesne. Pressure demand meter for fluid flow measurement. 3,675,480, Cl. 73-199.000.

Feldmuehle Aktiengesellschaft: *See—*
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., 3,676,294.

Feller, Gilbert, to Metalem S.A. Method for fabrication of rings for a watch dial. 3,675,295, Cl. 29-177.000.

Fellwock, Charles G.; and Tuley, Donald L., to Whirlpool Corporation. Reversible hinge for refrigerator. 3,675,271, Cl. 16-170.000.

Fennell, John Richard; and Harvey, Robert J., to Meditron, Inc. Taste-modifying composition containing miraculin and method of preparation. 3,676,149, Cl. 99-140.00r.

Fernandez, Claude-Jane: *See—*
Ducamus, Jean Matital; and Fernandez, Claude-Jane, 3,676,709.

Feroy, Arne. Controllable pitch propellers. 3,676,016, Cl. 416-157.000.

Ferrell, John O., to Tights, Inc. Method for fabricating panty hose. 3,675,247, Cl. 2-224.00r.

Ferroxcube Corporation: *See—*
Hall, Ronald Edward; and Hulbert, Larry Norman, 3,676,848.

Fibreboard Corporation, mesne: *See—*
Smith, James A., 3,675,897.

Fickenscher, William E.; and Harris, James E. Deep field optical label reader including means for certifying the validity of a label reading. 3,676,645, Cl. 235-61.11e.

Filippov, Vladimir Vasilievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Filper Corporation: *See—*
Meissner, Konrad E.; and McClelland, Etheride R., 3,675,695.

Finch, DeVer C.; and Kennedy, James A., to Honeywell Information Systems, Inc., mesne. Method, apparatus and computer program for determining the transmission rate and coding configuration of remote terminals. 3,676,858, Cl. 340-172.500.

Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., to Sangamo Electric Company. Keyboard to tape data input preparation unit. 3,676,854, Cl. 340-172.500.

Finelli, Thomas M.: *See—*
Stiff, Bernard G. E.; and Finelli, Thomas M., 3,675,980.

Fiore, John M., to Bio-Analytical Laboratories, Inc. Speculum instrument and isolated light means therefor. 3,675,641, Cl. 28-6.000.

Fire Devices, Inc.: *See—*
Gabb, William J., 3,676,570.

Firestone Tire & Rubber Company: *See—*
Wakefield, Lynn B., 3,676,396.

Fisans Limited: *See—*
Saggers, David Thomas, 3,676,545.

Fischer, Leonard G.; and Wong, Philip, to DCA Food Industries Inc. Method of forming an adherent coating on foods. 3,676,158, Cl. 99-166.000.

Fischer, Raymond G., to International Harvester Company. Duplex implement hitch. 3,675,945, Cl. 280-411.00c.

Fisher, Robert E., to Mobil Oil Corporation. Biaxial orientation of thermoplastic film. 3,676,539, Cl. 264-175.000.

Fister, Louis P.: *See—*
Scheublein, William A., Jr.; and Fister, Louis P., 3,675,941.

Fitch, Melvin G.: *See—*
Samiran, David; Cooling, Robert O.; and Fitch, Melvin G., 3,675,645.

Flanagan, James Loton; Kronmeyer, James Hughes; and Nelson, John Richard, to Bell Telephone Laboratories, Incorporated. Communications system for alphanumeric information employing audio tone signalling. 3,675,513, Cl. 179-84.0vf.

Flangeklamp Corporation: *See—*
Lickliter, Robert Paul; and Reeves, John F., 3,675,382.
Lickliter, Robert Paul; Abbott, Earl; and Reeves, John F., 3,675,957.

Flautt, Martin C.; Moran, Leland G.; and McCombs, Frank P., to Owens-Corning Fiberglas Corporation. Glass fiber-reinforced elastomers. 3,676,287, Cl. 161-140.000.

Fluck, Josef, to Schild, A., S.A. Watch movement having totalizers. 3,675,413, Cl. 58-74.000.

Fluor Corporation: *See—*
Jackson, Steven B.; Freieich, Ernest; and Hammond, James D., 3,675,435.

FMC Corporation: *See—*
Fairbanks, Theodore H., 3,676,267.

Foddy, Harold W.: *See—*
Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., 3,676,020.

Foden, Frederick Roger; and O'Mant, Derrick Michael, to Imperial Chemical Industries Limited. 2-Substituted benzylidene-4-phenyl-3-hydroxy 5-oxo-2,5-dihydrofuran derivatives. 3,676,464, Cl. 260-343.600.

Folden, Denver C.: *See—*
Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,676,259.
Appleby, Paul E.; Folden, Denver C.; and Peck, Arland A., 3,676,261.

Follett, Harold E. Novelty bathing garment. 3,675,245, Cl. 2-67.000.

Ford Motor Company: *See—*
Labana, Santokh S., 3,676,405.

Fork, Frank W., to Robertson, H. H., Company. Hold-down means for underfloor access housing. 3,676,568, Cl. 174-49.000.

Formax, Inc.: *See—*
Lekan, Henry N., 3,675,387.

Foroulis, Zisis Andrew, to Esso Research and Engineering Company. Inhibition of corrosion by hydrotreater effluent. 3,676,327, Cl. 208-47.000.

Forst, Steve Michael; and Reinheimer, Horst Alfred, to Bell Telephone Laboratories, Incorporated. Semiconductor target structure for image converting device comprising an array of silver contacts having discontinuous nodular structure. 3,676,741, Cl. 317-234.00r.

Forster, Mark. Wire cutting gauge. 3,675,335, Cl. 33-168.00r.

Fort Howard Paper Company: *See—*
Zapfe, Paul C., 3,675,476.

Fortner, William D., to Cavins Co., The. Torque or motion responsive apparatus. 3,675,751, Cl. 192-150.000.

Fortune, William S. Automatic tool system and method for control. 3,676,761, Cl. 318-574.000.

Foster, John A., to Clark, J. L., Manufacturing Co. Plastic cover with hinged closure and molding dies therefor. 3,675,812, Cl. 220-31.00s.

Foster, Leigh Curtis, to Zenith Radio Corporation. High-resolution linear optical scanning system with traveling wave acoustic lens. 3,676,592, Cl. 178-7.600.

Foster Wheeler Corporation: *See—*
Stevens, William D., 3,675,629.

Fowler, Gerald: *See—*
McHugh, John; and Fowler, Gerald, 3,675,566.

Frangatos, Gerassimos, to Mobil Oil Corporation. Lubricant and hydrocarbon fuel compositions. 3,676,347, Cl. 252-51.50r.

Frank, Dieter: *See—*
Helmut, Werner; Frank, Dieter; and Drachenberg, Werner, 3,676,245.

Frank, Victor S.; Stahly, Eldon E.; and Rice, Rip G., to Grace, W. R., & Co. Burn-resistant compositions containing a polythiol and a phosphonitrilic polymer. 3,676,311, Cl. 204-159.140.

Franzen, Volker: *See—*
Eggensperger, Heinz; Franzen, Volker; and Kloss, Wilfried, 3,676,471.

Fraser, John P.; and Hartman, David E., to Shell Oil Company. Method for forming and circulating plugs in a pipeline. 3,676,091, Cl. 48-190.000.

Frech, Kenneth J.: *See—*
Hoppstock, Frederic H.; Falvo, Louis A.; and Frech, Kenneth J., 3,676,518.

Frederick, Harold M., to Burroughs Corporation. Automatically disengaging, tape handler. 3,675,876, Cl. 242-198.000.

Freedman, Morris D., to Bendix Corporation, The. Shadow edge position detector using linear array of diodes with logic to generate gray code. 3,676,687, Cl. 250-209.000.

Freedman, Morris D., to Bendix Corporation, The. Optical image data processing system. 3,676,866, Cl. 340-173.0lt.

Freeland, Stanley R., to Bell & Howell Company. Pendulous type rangefinder for optical instrument. 3,675,559, Cl. 95-44.00c.

Freeman Chemical Corporation: *See—*
Svoboda, Glenn R.; and Reineck, Ronald W., 3,676,376.

Freeman, Peter A., to Bowles Fluidics Corporation. Fluidic irrigation. 3,675,672, Cl. 137-81.500.

Frei, Karl; and Hood, Edwin Elliott, to Bendix Corporation, The. Bicycle disc brake. 3,675,740, Cl. 188-26.000.

Frei, Karl; and Hood, Edwin Elliott, to Bendix Corporation, The. Bicycle disc brake. 3,675,741, Cl. 188-26.000.

Freieich, Ernest: *See—*
Jackson, Steven B.; Freieich, Ernest; and Hammond, James D., 3,675,435.

Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Coal plow. 3,675,971, Cl. 299-34.000.

Fried, Alan J.; and Fried, Louis. Napkin. 3,675,274, Cl. 24-67.00r.

Fried, Louis: *See—*
Fried, Alan J.; and Fried, Louis, 3,675,274.

Friedell, Morley V., to Martin-Marietta Corporation. Eyelid hybrid butterfly type poppet valve. 3,675,894, Cl. 251-163.000.

Fries, Walter: *See—*
Berg, Markus; Fries, Walter; and Kirstahler, Alfred, 3,676,340.

Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, to Henkel & Cie G.m.b.H. Detergent compositions containing a textile softener. 3,676,338, Cl. 252-8.750.

Frohlich, Josef; and Leguyt, Jacob, to Mannesmann Aktiengesellschaft. Jointed delivery equipment for fluids, particularly low temperature liquids. 3,675,680, Cl. 137-615.000.

Frost, Wade W., to Oxford Industries, Inc. Garment cutting and stacking method. 3,675,604, Cl. 112-262.000.

Frulla, Floro F.: *See—*
Doering, William Von E.; Farrissey, William J., Jr.; and Frulla, Floro F., 3,676,503.

Fry's Metals Limited: *See—*
Strauss, Rudolf Siegfried; and Teitz, Peter David, 3,675,307.

Fuchs, Harry B. Method and means for creating artificial gravity in spacecraft. 3,675,879, Cl. 244-1.0sc.

Fugono, Takeshi: *See—*
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.

Fuji Denki Kagaku Kabushiki Kaisha: *See—*
Kobayashi, Seihin; and Torii, Michihiro, 3,676,748.

Fuji Heavy Industries, Ltd.: *See—*
Ogawa, Osamu, 3,675,670.

Fuji Photo Film Co., Ltd.: *See—*
Akashi, Goro; Suzuki, Osamu; and Nakamura, Matsuaki, 3,676,217.
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.
Hara, Hikoharu; Oishi, Yasushi; and Nagao, Kameji, 3,676,141.
Mizuki, Eiichi; Oishi, Yasushi; and Sawahara, Masao, 3,676,137.
Ohkubo Kinji; Hayashi, Katsumi; and Sano, Kazuya, 3,676,124.
Yabuta, Yukio, 3,675,757.

Fuji Shashin Film Kabushiki Kaisha; now: *See—*
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.

Fujii, Tatsuo; and Watano, Yutaka, to Nippon Kogaku K.K. Miniature variable resistor with guide means for sliding contacts. 3,676,823, Cl. 338-139.000.

Fujimura, Yasushi: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.

Fujiwara, Yoshiyuki, to Tanabe Kakoki Co., Ltd. Power supply equipment for electric smelting furnace of large capacity. 3,676,564, Cl. 13-12.000.

Fulton, Michael; Jones, John Darrell; and Pearce, Christopher A., to Dow Corning Limited. Room temperature vulcanizable silicone rubber composition. 3,676,420, Cl. 260-185.000.

Fulton, Theodore Alan: *See—*
Anderson, Philip Warren; Dynes, Robert Carr; and Fulton, Theodore Alan, 3,676,718.

Fultz, Palmer. Glass melting furnace and control means for the flow of molten silicates therein. 3,676,099, Cl. 65-162.000.

Funfstuck, Horst; and Elazar, Shmuel, to Statham Instruments, Inc. Cardiac tachometer. 3,675,643, Cl. 128-2.06f.

Furlong, Owen Desmond Arthur Charles; and Bottrell, Neil L., to Westland Aircraft Limited. Manufacture of fluid logic components for fluidic circuits. 3,676,238, Cl. 156-3.000.

Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, to Hoffman-La Roche Inc. 15, 16 Substituted steroids and derivatives. 3,676,467, Cl. 260-397.300.

Furukawa Electric Company, The: *See—*
Kamata, Yoshihiro; and Hirose, Takashi, 3,676,322.

G. K. N. Somerset Wire Limited: *See—*
Cahill, Terence, 3,676,578.

Gabb, William J., to Fire Devices, Inc. Mounting for fire detector devices. 3,676,570, Cl. 174-61.000.

Gabor, Dennis, to Columbia Broadcasting Systems, Inc. Photo-electronic imaging apparatus. 3,676,732, Cl. 315-10.000.

Gadd, Edward George: *See—*
Conrad, John Harold; Reynolds, Anthony Edward St. Aubyn; and Gadd, Edward George, 3,676,707.

GAF Corporation: *See—*
Mackey, E. Scudder; and Miceli, Vincent J., 3,676,209.
Schultz, Herman S.; Katzenstein, William; and Williams, Earl P., 3,676,408.

Gage, Charles H. Chair-arm cup receptacle. 3,675,969, Cl. 297-194.000.

Gailay, Jean-Jacques: *See—*
Traber, Walter; Margot, Alfred; and Gailay, Jean-Jacques, 3,676,561.

Gaj, Emil A. Flood control system. 3,675,248, Cl. 4-1.000.

Gallacher, Lawrence Vincent, to American Cyanamid Company. Breathable waterproof fabric. 3,675,391, Cl. 55-16.000.

Gallagher, James P.: *See—*
Dalson, Milton H.; Gallagher, James P.; and Pfefferle, William C., 3,676,328.

Galloway, Reginald B.; and Shumard, Raymond F., to Lilly, Eli, and Company. Ascaris suum vaccine. 3,676,547, Cl. 424-88.000.

Galowin, Lawrence S.: *See—*
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,675,711.

Game Time, Inc.: *See—*
Ewers, Ronald L., 3,675,919.

Ganiaris, Neophytos, to Struthers Scientific and International Corporation. Desalination process. 3,675,436, Cl. 62-58.000.

Garbark, Roman F.: *See—*
Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., 3,675,927.

Gardner-Denver Company: *See—*
Baker, William J.; and Hurst, Richard J., 3,675,861.

Garilli, Francesco; and Marino, Michelangelo, to Montecatini Edison S.p.A. Apparatus for the drawing of samples of gaseous mixtures to be analyzed. 3,675,489, Cl. 73-421.50r.

Garmong, Victor H. Cable reel. 3,676,614, Cl. 191-12.200.

Garrett, William D.; and Barger, William R., Jr., to United States of America, Navy. Chemical sea surface marker. 3,676,359, Cl. 252-301.30r.

Garrison, George E. Auxiliary tire track. 3,675,701, Cl. 152-225.000.

Garth, Leonid G., to Eastman Kodak Company. Process for preparing high gloss photographic paper. 3,676,183, Cl. 117-64.00r.

Gartland, Albert J., Jr.; and D'Amato, Michael J., to Hubbell, Harvey, Incorporated. Contact spring assembly. 3,676,829, Cl. 339-33.000.

Gary, Wilbur, to SCM Corporation. Isomerization of 2-hydroxy p-menthane 1-carboxylate and 2-hydroxy-8-p-menthene-1-carboxylate to the corresponding 1-hydroxy-2-carboxylate counterpart. 3,676,487, Cl. 260-489.000.

Garzon, Ruben D., to I-T-E Imperial Corporation. Ground-fault detector using square hysteresis loop reactor core. 3,676,737, Cl. 317-18.00d.

Gates, David S.: *See—*
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,676,521.

Gatewood, John R.: *See—*
Maserjian, Joseph; and Gatewood, John R., 3,676,754.

Gathman, Albert; and Gleim, George W., to Esso Research and Engineering Company. Lubricant for textile machinery. 3,676,342, Cl. 252-18.000.

Gatts, James D. Method and apparatus for dynamic health testing evaluation and treatment. 3,675,640, Cl. 128-2.05r.

Gatzi, Karl: *See—*
Bader, Jorg; and Gatzi, Karl, 3,676,459.

Gault, Kenneth W.: *See—*
Unick, Alvin J.; and Gault, Kenneth W., 3,676,348.

Gauthier, Oscar, to Clebel Inc. Tourniquet. 3,675,657, Cl. 128-327.000.

Gautreaux, Gloria A.: *See—*
Harper, Robert J., Jr.; Bruno, Joseph S.; and Gautreaux, Gloria A., 3,676,052.

Gawlick, Heinz; and Bendler, Hellmut. Fastening means severable by ignition of an explosive charge. 3,675,533, Cl. 89-113.000.

Gaynor, Paul E. Ski lift apparatus. 3,675,588, Cl. 104-173.000.

Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, 3,675,971.

Gebr. Eickoff, Maschinenfabrik und Eisengiessair m.b.H.: *See—*
Brandenburg, Helmut; and Beck, Hansludwig, 3,676,268.

Gebruder Buhler AG: *See—*
Muller, Roman, 3,675,697.

Geigy Chemical Corporation: *See—*
Traber, Walter; Margot, Alfred; and Gailay, Jean-Jacques, 3,676,561.
Tscharner, Christopher Johannes, 3,676,339.
Zergenyi, Janos; and Habicht, Ernst, 3,676,560.

Geisler, Martin J.: *See—*
Driver, Michael C.; and Geisler, Martin J., 3,675,313.

General Aniline & Film Corporation: *See—*
Webb, Albert E., 3,675,354.

General Automotive Specialty Company, Inc.: *See—*
Miller, Martin P., 3,676,617.

General Aviation Electronics, Inc.: *See—*
Boelter, Donald A., 3,676,767.

General Cable Corporation: *See—*
Rubinstein, Solomon, 3,676,571.

General Electric and English Electric Companies, Limited, The: *See—*
Ingram, David John; and Maillardet, Frederick James, 3,675,794.

General Electric Company: *See—*
Agens, Maynard C.; and Kantor, Simon W., 3,676,285.
Collins, Neil E.; Kerber, Elwyn W.; and Neville, Raymond R., 3,676,668.
Datta, Ranajit Kumar, 3,676,361.
Downing, Arthur C., 3,675,351.
Edgar, D. Brown, Jr., 3,676,349.
Girard, Roland T., 3,676,314.
Hawks, John D., 3,676,750.
Humphrey, John G., 3,676,582.
Kantola, Robert A.; and Boothe, Willis A., 3,675,473.
Kim, Sang-Chul, 3,676,044.
Laskowski, Edward L., 3,676,046.
Martin, Donald L.; and Benz, Mark G., 3,676,577.
Neuhouser, Donald E., 3,676,739.
Schmidt, Herman, 3,676,656.
Ward, William J., III, 3,676,220.
Watrous, Donald L.; and Cote, Paul T., 3,676,045.
Whipple, Edward R., 3,675,444.
Wirth, Joseph G., 3,676,448.
Worcester, Joseph A., 3,676,781.

General Fire Extinguisher Corporation: *See—*
Balmes, Mark E., Sr., 3,675,722.

General Foods Corporation: *See—*
Bentz, Alan P.; and Scarpellino, Richard, 3,676,156.
Glasser, George; Sjonvall, Ragnar Edward; and Kaplow, Milton, 3,676,154.
Glicksman, Martin; Farkas, Elizabeth H.; and Carter, Sadie,, 3,676,150.

Scharschmidt, Rudolph K., 3,676,151.
Gentile, Salvatore A. Impact safety hockey puck. 3,675,928, Cl. 273-128.00r.
George, Hal E.: *See—*
Zajac, Theodore S.; and George, Hal E., 3,675,539.
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, to American Can Company. Brim curling. 3,676,543, Cl. 264-296.000.
Gereby, John L.: *See—*
Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., 3,675,536.
Gerecht, John Fred; and Wixon, Harold Eugene, to Colgate-Palmolive Company. Textile softening compositions. 3,676,341, Cl. 252-8.800.
Gerhardt, Peter H.: *See—*
Wiser, Joseph E.; and Gerhardt, Peter H., 3,676,725.
Gerhardt, Wilfried; and Harnisch, Heinz, to Knapsack Aktiengesellschaft. Process for producing a stabilized suspension NPK, NP or PK fertilizer. 3,676,100, Cl. 71-37.000.
Germain, Andrew G.; and Dressel, William G., to Amsted Industries, Incorporated. Stopper renewal device. 3,675,518, Cl. 82-1.00b.
Gerould, David S., to Weld-Motion, Inc. Wire feeder. 3,675,837, Cl. 226-187.000.
Gerrard Company Ltd., mesne: *See—*
Burrage, Benjamin S.; and Blair, George S., 3,675,760.
Gersbach, John E., to International Business Machines Corporation. Sense amplifier latch for monolithic memories. 3,676,703, Cl. 307-235.000.
Getman, Anatoly Fedorovich: *See—*
Shulzhenko, Alexandr Alexandrovich; and Getman, Anatoly Fedorovich, 3,676,068.
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, to Societe anonyme dite: L'Oreal. Neutralizing compositions for permanent wave operation. 3,676,546, Cl. 424-71.000.
Ghiz, George J. Pop-up head for water jet-pool cleaning system. 3,675,252, Cl. 4-172.170.
Ghys, Theofiel Hubert: *See—*
Depoorter, Henri; and Ghys, Theofiel Hubert, 3,676,119.
Giarrizzo, Lawrence P. Exhaust filter attachment. 3,675,398, Cl. 55-316.000.
Giarrusso, Gino A.: *See—*
Silverman, Herbert P.; and Giarrusso, Gino A., 3,676,188.
Gidge, Lester: *See—*
Atwood, Lamar T.; and Gidge, Lester, 3,675,285.
Gilchrist, David W. Aquatic vehicle. 3,675,259, Cl. 9-310.00g.
Gille, John P.: *See—*
McGrew, Jay L.; and Gille, John P., 3,675,809.
Gillemot, George W.; and Thompson, John T. Universal sheath bond for communications cable. 3,676,836, Cl. 339-97.00r.
Gillette Company, The: *See—*
Perry, Roger L., 3,675,322.
Gilmoure, Harold J., to Sales Promotion Products, Inc. Banner mounting device. 3,675,356, Cl. 40-145.000.
Gilson, James R.: *See—*
Catlett, John C., 3,675,370.
Gimbel, William T.: *See—*
Larson, Carl B.; and Gimbel, William T., 3,675,801.
Giordano, Annie Sue: *See—*
Hewitt, Gordon Trent; and Giordano, Annie Sue, 3,676,199.
Girard, Peter F.; and Peterson, John M., to Teledyne Ryan Aeronautical Company. Mass transportation system. 3,675,582, Cl. 104-23.00r.
Girard, Roland T., to General Electric Company. Method of electrodepositing vitreous coatings atop a multiapertured substrate. 3,676,314, Cl. 204-181.
Girardin, Howard N., to Empire Tool Company. Combination cut-off and chamfer tool. 3,675,291, Cl. 29-97.000.
Girodat, Joseph C. F., to Massey-Ferguson Industries Limited. Combine stone trap door. 3,675,660, Cl. 130-27.0jt.
Glaise, Rene, to U.S. Philips Corporation. Semiconductor device and method of manufacturing said device. 3,676,755, Cl. 317-235.00r.
Glanzstoff AG: *See—*
Riess, Werner; Schaefer, Helmut; and Bayer, Bernd, 3,676,180.
Glass, John P. Jet steering boat. 3,675,611, Cl. 115-12.00r.
Glass Laboratories Company: *See—*
Shanok, Victor; and Shanok, Jesse P., 3,675,355.
Glasser, George; Sjonvall, Ragnar Edward; and Kaplow, Milton, to General Foods Corporation. Shelf stable tomato soup concentrate . 3,676,154, Cl. 99-124.000.
Glatz, Albert. Ball joint. 3,675,953, Cl. 287-12.000.
Glaverbel S.A.: *See—*
Plumat, Emile; and Van Laethem, Robert, 3,676,097.
Glaxo Laboratories Limited: *See—*
Siddons, Phillip Thomas, 3,676,437.
Gleim, George W.: *See—*
Gathman, Albert; and Gleim, George W., 3,676,342.
Gleisberg, Dietrich: *See—*
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.
Glicksman, Martin; Farkas, Elizabeth H.; and Carter, Sadie,, to General Foods Corporation. Low calorie yeast leavened baked products. 3,676,150, Cl. 99-90.00r.
Globe-Union Inc.: *See—*
Mishler, Ralph Ephraim, 3,676,212.
Globus Maskinfabrik A/S: *See—*
Kverneland, Finn, 3,675,856.
Gloge, Detlef Christoph, to Bell Telephone Laboratories, Incorporated. Optical autocorrelator for autocorrelating picosecond optical pulses. 3,675,985, Cl. 350-157.000.
Godzicki, Martin Michael: *See—*
Horn, Harold Edwin; Kimball, Bruce Allan; and Godzicki, Martin Michael, 3,676,155.
Goens, Duane N.; and Clapper, Thomas W., to Kerr-McGee Chemical Corporation. Production of sodium chlorate. 3,676,315, Cl. 204-95.000.
Goetchius, Norman E.; and Zaky, Amin Y., to Stromberg-Carlson Corporation. Telephone set identification system. 3,676,602, Cl. 179-17.00a.
Goff, Don L.: *See—*
Tallarico, Robert A.; and Goff, Don L., 3,675,256.
Goins, William C., Jr.; and McGlothlin, Bruce B., to Gulf Research & Development Company. Method of gravel packing wells. 3,675,717, Cl. 166-278.000.
Goldbaum, Elliott: *See—*
Kaldor, Robert M.; Borruso, Joseph V.; and Goldbaum, Elliott, 3,676,834.
Golde, H. T., GmbH, Firma: *See—*
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, 3,675,371.
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, to Golde, H. T., GmbH, Firma. Spring closeable window operating mechanism. 3,675,371, Cl. 49-352.000.
Goldman, David A.; and Oppenheimer, Henry N., to Columbia Broadcasting System, Inc. Video display system. 3,676,850, Cl. 340-154.000.
Goldman, Irving M.; and Larson, Jerry K., to Pfizer Inc. Dibenzodiazacyclotetra decadiene compounds. 3,676,428, Cl. 260-239.0dd.
Goldthorp, David Clayton; Limiero, Albert David; and Smith, John Paul, to Bell Telephone Laboratories, Incorporated. Line circuit for a key telephone system. 3,676,608, Cl. 179-81.00r.
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, to Farbenfabriken Bayer Akteingesellschaft. Silyl-substituted urea derivatives. 3,676,478, Cl. 260-448.20n.
Goodyear Tire & Rubber Company: *See—*
Hewitt, John H., 3,675,482.
Goodyear Tire & Rubber Company, The: *See—*
Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,676,259.
Appleby, Paul E.; Riggs, Robert S.; and Woodhall, Edwin S., 3,676,260.
Appleby, Paul E.; Folden, Denver C.; and Peck, Arland A., 3,676,261.
Bauer, Richard G.; and Patitsas, George P., 3,676,410.
Christie, Christopher E.; and Martin, Eugene Earl, 3,676,028.
Enabnit, Robert S.; and Wolfe, Merritt W., 3,675,375.
Fall, Harry H., 3,676,529.
Griffin, Theodore F.; and Rye, Grover W., 3,675,621.
Griffin, Theodore F., 3,675,622.
Hoppstock, Frederic H.; Falvo, Louis A.; and Frech, Kenneth J., 3,676,518.
LaRue, James F., 3,675,407.
Piirma, Aleksander, 3,676,393.
Suter, Charles A., 3,675,377.
Throckmorton, Morford C.; and Saitman, William M., 3,676,411.
Watts, George T.; and Yeager, Robert W., 3,675,703.
Gordon, Bruce L.: *See—*
Wideman, Gilder L., 3,675,659.
Gorey, Edward F.: *See—*
Dupnock, Andrew; Gorey, Edward F.; and Keenan, William A., 3,676,775.
Gorman, John R. Balancing game. 3,675,920, Cl. 273-1.00r.
Gosnell, Earl J.; and Taylor, Jerry H., to Burroughs Corporation. Gravure printing plate making process. 3,675,572, Cl. 101-401.100.
Goto, Jugo: *See—*
Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, 3,676,402.
Gott, Hans: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, 3,676,631.
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, 3,676,632.
Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., to Gottlieb, D., & Company. Two-player pinball machine. 3,675,927, Cl. 273-119.00a.
Gottlieb, D., & Company: *See—*
Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., 3,675,927.
Gould, Inc., mesne: *See—*
Wilson, Gardner P., 3,675,333.
Goulds Pumps, Incorporated: *See—*
Bevan, Robert H.; and Buffone, Vincent D., 3,676,014.
Grace, W. R., & Co.: *See—*
Artz, Kenneth W., 3,675,811.
Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., 3,676,386.
Fallowfield, Derek, 3,676,159.
Frank, Victor S.; Stahly, Eldon E.; and Rice, Rip G., 3,676,311.
Kehr, Clifton L.; and Wszolek, Walter R., 3,676,195.
Kehr, Clifton L.; and Wszolek, Walter R., 3,676,283.
Los, Lenore J., 3,676,440.
Scherzer, Julius; and Albers, Edwin W., 3,676,368.
Taylor, Monroe F., 3,675,767.

Gradko Glass Laboratories, Inc.: *See—*
Grady, Dennis R., 3,676,076.
Grady, Dennis R., to Gradko Glass Laboratories, Inc. Disposable container. 3,676,076, Cl. 23-292.000.
Graf, Edwin H. Auxiliary carrier for portable boxes. 3,675,814, Cl. 220-85.00r.
Gram, Hans, to Brodrene Gam A/S. Table for rotating freezing apparatus. 3,675,443, Cl. 62-345.000.
Granchelli, Felix E.: *See—*
Pars, Harry G.; and Granchelli, Felix E., 3,676,462.
Grant, David C.; and Lamson, Byron A. Berry picking machine. 3,675,406, Cl. 56-330.000.
Grant, Peter H., to Bell & Howell Company. Film retaining insert for reels. 3,675,869, Cl. 242-74.000.
Graser, Toni; and Hirs, Joseph, said Hirs assor. to said Graser. Electronic ignition device for internal combustion engines. 3,675,635, Cl. 123-148.00e.
Graves, Irving Stuart, to Du Pont de Nemours, E. I., and Company. Films containing superimposed curved configurations of magnetically orientated pigment. 3,676,273, Cl. 161-3.000.
Gravlee, L. Clark: *See—*
Wideman, Gilder L., 3,675,659.
Gray Industries, Inc.: *See—*
Gray, Oscar S., 3,676,058.
Gray, Oscar S., to Gray Industries, Inc. Microwave treating apparatus and method. 3,676,058, Cl. 21-54.00r.
Great Lakes Carbon Corporation: *See—*
Winstead, Thomas W., 3,676,537.
Grebik, Stephen J.: *See—*
Hartz, Marvin E.; Taormina, Anthony J.; and Grebik, Stephen J., 3,676,838.
Green, David T.: *See—*
Bryan, Graham W.; and Green, David T., 3,675,688.
Green, Don: *See—*
Wideman, Gilder L., 3,675,659.
Green, Kurt G.: *See—*
Hollister, Robert H.; Wilburn, Garlington C.; and Green, Kurt G., 3,676,623.
Green, Mino, to Zenith Radio Corporation. Acoustic surface wave transmission device with amplification. 3,676,788, Cl. 330-5.500.
Green, Wesley R.: *See—*
McGroarty, Bryan M., 3,676,198.
Greer, Edward M., to Greer Hydraulics, Inc. Method of making pressure vessel. 3,675,306, Cl. 29-487.000.
Greer Hydraulics, Inc.: *See—*
Greer, Edward M., 3,675,306.
Gref, Hans: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Gregorovic, Dragutin T. Attachment devices for elongate members. 3,675,283, Cl. 05/01/72.
Griffin, Ivan E., to Griffin, Raymond R. Anti-slip surfaced article. 3,676,208, Cl. 117-161.0zb.
Griffin, Raymond R.: *See—*
Griffin, Ivan E., 3,676,208.
Griffin, Theodore F.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Device for removing excess liquid coating from a moving fabric. 3,675,621, Cl. 118-122.000.
Griffin, Theodore F., to Goodyear Tire & Rubber Company, The. Dip tank used in coating fabric. 3,675,622, Cl. 118-421.000.
Grimm, Dieter; Kandler, Joachim; Merkenich, Karl; and Pirig, Wolf-Dieter. Process for the manufacture of enzyme and perborate-containing detergent compositions. 3,676,352, Cl. 252-99.000.
Griner, Arthur J.; and Ryder, George, to National Biscuit Company. Cracker stacking and segregating apparatus. 3,675,792, Cl. 214-6.0ba.
Grinnell Corporation: *See—*
Mears, James W., 3,675,952.
Groos, Horst Hans, to Schloemann Aktiengesellschaft. Metal-tube extrusion press. 3,675,457, Cl. 72-265.000.
Grosh, James L., to United Aircraft Corporation. Method for longitudinal reinforcing plastic pipes. 3,676,246, Cl. 156-188.000.
Grosholz, James R.: *See—*
Crowley, Charles L.; Grosholz, James R.; and Hutter, Charles G., III, 3,675,653.
Gruber, Bernard A., to Monsanto Company. Laminated article. 3,676,293, Cl. 161-206.000.
Gruenfeld, Norbert, to Ciba-Geigy Corporation. Derivatives of 3-aryl-5-alkylhydantoins. 3,676,456, Cl. 260-309.500.
Grutsch, James F.; and Mallatt, Russell C., to Standard Oil Company. Apparatus used in purifying waste water. 3,675,779, Cl. 210-242.000.
GTE Automatic Electric Laboratories, Incorporated: *See—*
Orchard, Henry J.; and Sheahan, Desmond F., 3,676,806.
GTE Sylvania Incorporated: *See—*
Bidell, Frederick W.; and Hughes, Richard J., 3,676,794.
Guarino, Michael J., Sr., 2/3 to La Marca, Thomas, Jr. Golf tee. 3,675,929, Cl. 273-183.00a.
Gubler, Kurt: *See—*
Bosshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, 3,676,450.
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., to Stromberg-Carlson Corporation. Camp-on busy checking and monitor circuit. 3,676,606, Cl. 179-18.0bg.
Guenard, Pierre, to Thomson-CSF. Microwave tube amplifier circuit for amplitude modulated and frequency modulated microwave signal. 3,676,791, Cl. 330-43.000.
Guernet, Georges, to Commissariat a l'Energie Atomique. Method for the production of an ion beam having a large cross-sectional area. 3,676,693, Cl. 250-49.50c.
Guggenbickler, Leon E.: *See—*
Russell, Phillips G.; Guggenbickler, Leon E.; and Crawford, John H., 3,675,791.
Guillet, Philippe Robert, to L'Oreal. Device for withdrawing samples. 3,675,491, Cl. 73-425.40r.
Gulf Oil Corporation: *See—*
Bokros, Jack C., 3,676,179.
Klima, Frank J.; and Duncan, James D., 3,676,236.
Gulf Research & Development Company: *See—*
Carlson, Edgar; and Lehrian, William R., 3,676,333.
Doyle, William C., Jr., 3,676,479.
Ellis, Alan F., 3,676,473.
Ellis, Alan F.; Kresge, Alfred N.; and Seekircher, Richard, 3,676,489.
Goins, William C., Jr.; and McGlothlin, Bruce B., 3,675,717.
Onopohenko, Anatoli; Schulz, Johann G. D.; and Williamson, Roger C., 3,676,488.
Paviak, Stanley C., 3,676,373.
Rosenthal, Robert W., 3,676,514.
Gundlach, Robert W., to Xerox Corporation. Imaging system. 3,676,215, Cl. 117-230.000.
Gutarevich, Jury Feodosievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.
Gutknecht, Jacques Emile: *See—*
Loup, Jean-Pierre Olivier; Gutknecht, Jacques Emile; and Anthony, Anne-Marie, nee Barbier, 3,676,771.
Gutlhuber, Friedrich; and Kasper, Lothar. Apparatus for automatic execution of machining operations, such as welding. 3,675,841, Cl. 228-25.000.
Habicht, Ernst: *See—*
Zergenyi, Janos; and Habicht, Ernst, 3,676,560.
Haddad, Albert G. Control system for dual rail model electric vehicles. 3,675,586, Cl. 104-149.000.
Hafer, Karl-Heinz: *See—*
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, 3,675,971.
Haglund, Bernard F.; and Salvarezza, Robert M., to Coast Marine & Industrial Supply Inc. Quick-release storage of a life ring. 3,675,257, Cl. 9-14.000.
Hahn, Ernest A., to PPG Industries, Inc. Crosslinked polyvinyl chloride or polyvinylidene fluoride film. 3,676,192, Cl. 117-93.310.
Haimula, Norman E., to Atlantic Richfield Company. Arctic construction and drilling. 3,675,430, Cl. 61-46.000.
Hajduk, Frank R., to Regis Manufacturing Company. Method of locating a bracket. 3,675,293, Cl. 29-150.000.
Hajduk, Frank R., to Regis Manufacturing Company. Cabinet bracket. 3,675,955, Cl. 287-20.927.
Hajduk, Jeno; and Katai, Mihaly, to Nikex Nehezipari Kulkereskedelmi Vallalat. Outer nozzle for the cutting head of a flame cutter. 3,675,852, Cl. 239-822.000.
Hajtomu-es Felvonogyar: *See—*
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.
Hake, Walter Thomas; and Stieglitz, Henry Gilbert, to American Can Company. Apparatus for applying a strip member to a cylindrical container body. 3,676,271, Cl. 156-567.000.
Hakim, Salomon. Fluid operatable hemostat. 3,675,656, Cl. 128-325.000.
Haley, Thomas W.: *See—*
Orzechowski, John F.; and Haley, Thomas W., 3,676,038.
Halff, Albert H.; and Reid, Allen F. Apparatus for emptying and refilling liquid in a reservoir. 3,675,829, Cl. 222-204.000.
Hall, C. P., Company of Illinois, The: *See—*
Kuceski, Vincent P., 3,676,344.
Kuceski, Vincent P., 3,676,345.
Hall, Edwin F., to Alden Self-Transit Systems Corporation. Transportation system. 3,675,584, Cl. 104-28.000.
Hall, Floyd V., to Liggett & Myers Incorporated. Automatic cigarette feed machine having a vacuum belt conveyor. 3,675,761, Cl. 198-184.
Hall, Harold R., to Libbey-Owens-Ford Company. Method of bending glass sheets. 3,676,098, Cl. 65-106.000.
Hall, Ronald Edward; and Hulbert, Larry Norman, to Ferroxcube Corporation. Machine recognition of symbols. 3,676,848, Cl. 340-146.3ac.
Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company, N.V. Rolling bearings comprising annular washers or cylindrical sleeves provided with a number of ball grooves. 3,675,979, Cl. 308-230.000.
Hallstedt, Carl Goran Albin: *See—*
Arsenius, Torsten Henry; and Hallstedt, Carl Goran Albin, 3,675,977.

Halpern, Arthur, to M. I. Sales Co., Inc. Pin wheel toy. 3,675,364, Cl. 46-58.000.

Hammann, Ingeborg: *See—*
Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, 3,676,555.

Hammond, James D.: *See—*
Jackson, Steven B.; Freieich, Ernest; and Hammond, James D., 3,675,435.

Hammond, Michael J.; and Haynes, James W., to Sylvania Electric Products, Inc. Method of stabilizing rare earth oxide phosphor in dichromate sensitized coating slurry. 3,676,177, Cl. 04/24/70.

Hanck, Ronald C.: *See—*
De Weese, Duane G.; and Hanck, Ronald C., 3,676,148.

Hanrahan, Donald J., to United States of America, Navy. Fast switch utilizing hybrid electron-beam-semiconductor devices. 3,676,716, Cl. 307-308.000.

Hanselman, Larry R.: *See—*
Miller, Timothy A.; and Hanselman, Larry R., 3,675,625.

Hansen, A. L., Mfg. Co.: *See—*
Hansen, John A.; and Doerrfeld, Robert E., 3,675,959.

Hansen, Glen D.: *See—*
Buschbom, Floyd E.; Hansen, Glen D.; and Johnson, Roger L., 3,675,758.

Hansen, John A.; and Doerrfeld, Robert E., to Hansen, A. L., Mfg. Co. Door holder. 3,675,959, Cl. 292-70.000.

Hansen, Marvin E.: *See—*
Quigley, Norman R.; and Hansen, Marvin E., 3,675,752.

Hansen, Quinten A. Single lever selectively actuated forward and reverse clutches. 3,675,748, Cl. 192-51.000.

Hanson, John R.: *See—*
Tupper, Willis E.; and Hanson, John R., 3,676,026.

Hanson, Theodore L., to Vendo Company, The. Floating ingredient-tank sold-out system for beverage dispensing machines. 3,675,819, Cl. 222-51.000.

Happe, Reynold, to McGraw-Edison Company. Switch mechanism with unitary biasing, contact, and detent spring. 3,676,627, Cl. 200-159.00a.

Hara, Hikoharu; Oishi, Yasushi; and Nagao, Kameji, to Fuji Photo Film Co., Ltd. Process for the preparation of color-photographic sensitive materials using nonionic and anionic surface active agents. 3,676,141, Cl. 96-100.000.

Hara, Katsuyuki; and Schonhorn, Harold, to Bell Telephone Laboratories, Incorporated. Techniques for forming seals between polyethylene and fluorocarbon polymers. 3,676,289, Cl. 161-189.000.

Hare, George Anthony; and Smith, Alan Ernest William, to National Research Development Corporation. Zinc alloys. 3,676,115, Cl. 75-178.0am.

Harkins, Patrick A., Jr., to Stromberg Datagraphix, Inc. Sputter etching process. 3,676,317, Cl. 204-192.000.

Harnisch, Heinz: *See—*
Gerhardt, Wilfried; and Harnisch, Heinz, 3,676,100.

Harper, Robert C., to Cincinnati Milacron Inc. Mixing device. 3,675,903, Cl. 259-8.000.

Harper, Robert J., Jr.: *See—*
Lofton, John T.; Harper, Robert J., Jr.; and Blanchard, Eugene J., 3,676,207.

Harper, Robert J., Jr.; Bruno, Joseph S.; and Gautreaux, Gloria A., to United States of America, Agriculture. Polypropylene glycols and substituted polypropylene glycols are used in conjunction with cross-linking agents to produce durable press fabrics with improved soil release performance. 3,676,052, Cl. 8-115.600.

Harriman, Allen C.: *See—*
Kamborian, Jacob S.; Harriman, Allen C.; and Vornberger, Karl F., 3,675,260.

Harris, Brian Walton: *See—*
Capp, Clifford William; Harris, Brian Walton; and Hawkins, Edwin George Edward, 3,676,430.

Harris, James E.: *See—*
Fickenscher, William E.; and Harris, James E., 3,676,645.

Harrison, David; and Sainz, Raul T., to Ransburg Electro-Coating Corporation. Method of projecting plural component material upon a suitable base. 3,676,197, Cl. 117-105.500.

Harsco Corporation: *See—*
Arndt, Charles J., 3,675,762.

Hartford Spinning (Canada) Ltd.: *See—*
Rosenstein, Nathan, 3,675,409.

Hartman, David E.: *See—*
Fraser, John P.; and Hartman, David E., 3,676,091.

Hartung, Kuhn & Co., Maschinenfabrik G.m.b.H.: *See—*
Kubsch, Wilhelm, 3,675,400.

Hartz, Marvin E.; Taormina, Anthony J.; and Grebik, Stephen J., to Essex International, Inc. Electrical connectors. 3,676,838, Cl. 339-217.000.

Harvey, Robert J.: *See—*
Fennell, John Richard; and Harvey, Robert J., 3,676,149.

Harwood, Charles C.; and Holtz, William E., Jr., to Quaker Oats Company, The. Spray discharge nozzle. 3,675,855, Cl. 239-597.000.

Hashino, Shinsuke: *See—*
Miyachi, Kiyoichi; Hashino, Shinsuke; and Hongu, Tomokazu, 3,675,346.

Haskell, Donald M.; and Munro, Bradley L., to Phillips Petroleum Company. Purification of ethylene or propylene streams containing carbon monoxide. 3,676,516, Cl. 260-677.00a.

Hata, Go: *See—*
Takahashi, Kuniyuki; Hata, Go; and Miyake, Akihisa, 3,676,470.

Hatch, Seymour A., to Chicago Rawhide Manufacturing Company. Track pin seal. 3,675,936, Cl. 277-94.000.

Hattori, Hiroyuki: *See—*
Komori, Shigehiro; and Hattori, Hiroyuki, 3,675,999.

Haug, Theobald; and Batzer, Hans, to Ciba-Geigy Corporation. Hydantoin diisocyanates. 3,676,455, Cl. 260-309.500.

Haug, Warren R.: *See—*
Edwards, James B.; and Haug, Warren R., 3,676,152.

Hausner, Jerry, to Narda Microwave Corporation, The. Selection circuitry. 3,676,751, Cl. 317-137.000.

Hawkins, Edwin George Edward: *See—*
Capp, Clifford William; Harris, Brian Walton; and Hawkins, Edwin George Edward, 3,676,430.

Hawks, John D., to General Electric Company. Data input device with hand-held selective circuit closing means. 3,676,750, Cl. 317-112.000.

Hawks, Ronald W., to Roberts & Porter, Inc. Blanket bar and adapter bar assembly for printing blanket. 3,675,573, Cl. 101-415.100.

Hawley, Harry Ray: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, 3,676,543.

Hawley Products Company: *See—*
Stewart, John S., 3,676,278.

Hawryluk, Alexandra S.; and Hawryluk, John, to Control Research Products, Inc., mesne. Gas purifier unit. 3,675,396, Cl. 55-225.000.

Hawryluk, John: *See—*
Hawryluk, Alexandra S.; and Hawryluk, John, 3,675,396.

Hayakawa, Shigeru: *See—*
Taki, Hiromitsu; Hayakawa, Shigeru; and Nagase, Kaneomi, 3,676,351.

Hayashi, Katsumi: *See—*
Ohkubo Kinji; Hayashi, Katsumi; and Sano, Kazuya, 3,676,124.

Hayashi, Roshio: *See—*
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.

Hayashi, Yoshimasa: *See—*
Nakajima, Yasuo; and Hayashi, Yoshimasa, 3,675,633.

Haynes, James W.: *See—*
Hammond, Michael J.; and Haynes, James W., 3,676,177.

Hazard Sensor Inc.: *See—*
Scanlan, Warren F., 3,676,738.

Hazeltine Corporation: *See—*
Clifford, Thomas J.; and Nelson, Robert C., 3,675,860.

Hazen Research, Inc.: *See—*
Hazen, Wayne C., 3,676,106.

Hazen, Wayne C., to Hazen Research, Inc. Ion exchange process for the recovery of metals with cation exchange agents. 3,676,106, Cl. 75-101.00r.

Hechelhammer, Wilhelm: *See—*
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, 3,676,544.

Heckelsberg, Louis F., to Phillips Petroleum Company. Conversion of olefins. 3,676,520, Cl. 260-683.00d.

Heetman, Alphonsus, to U.S. Philips Corporation. Telecommunication device. 3,676,599, Cl. 179-15.0bs.

Heffer, Edward Charles: *See—*
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, 3,675,474.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Wirz, Arno, 3,675,917.

Heidenhain, Johannes, Dr.: *See—*
Ernst, Alfons; and Hofling, Rudolf, 3,675,331.

Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous production of expandable thermoplastics. 3,676,378, Cl. 260-2.50e.

Heiman, John C., to Dow Chemical Company, The. Recovery of dicyclopentadiene from cracked petroleum. 3,676,509, Cl. 260-666.0py.

Hein, Matthew Edward, to American Can Company. Aerosol can with propellant actuated slide piston. 3,675,824, Cl. 222-145.000.

Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
Cremer, Walter, 3,676,305.

Heinze, Gerhard: *See—*
Podschus, Ernst; Dorn, Ludwig; and Heinze, Gerhard, 3,676,366.

Heisler, Raymond A. Method and apparatus for applying plastic grips to wire bail handles. 3,675,305, Cl. 29-439.000.

Hellmig, Ehrhard, to Agfa-Gevaert Aktiengesellschaft. Process for the production of negative or positive continuous-tone or screened images thereof. 3,676,122, Cl. 96-23.000.

Helmut, Werner; Frank, Dieter; and Drachenberg, Werner, to Akzona Incorporated. Process for the production of nonwoven webs of continuous filaments. 3,676,245, Cl. 156-181.000.

Helsley, Grover Cleveland, to Robins, A. H., Company, Incorporated. 11, 12-Dihydrodibenz [b,f] azocin-6 (5H)-ones. 3,676,432, Cl. 260-239.30t.

Henc, Edward V.; and Devlin, Edmund F. X., said Devlin assor. to said Henc. Air cushioned kicker feed bar. 3,675,918, Cl. 271-44.000.

Hendrickson, Jack R. Automotive vehicle signal light warning method. 3,676,844, Cl. 340-71.000.

Henegar, Hubert B., to Bendix Corporation, The. Numerical control system using position number generator. 3,676,650, Cl. 235-151.110.

Henkel & Cie G.m.b.H.: *See—*

Berg, Markus; Fries, Walter; and Kirstahler, Alfred, 3,676,340.
Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, 3,676,338.
Stolpa, Gerhard, 3,676,468.
Henning, Bodo, to Volkswagenwerk Aktiengesellschaft. Safety steering wheel for power vehicles. 3,675,505, Cl. 74-552.000.
Henry Beakbane (FORTOX) Limited: *See—*
Moseley, Royston L.; and Knowles, Peter M., 3,676,286.
Henry, James William, to Eastman Kodak Company. Environmentally disintegratable plastic compositions comprising copolymers of ethylene and carbon monoxide and a degradation accelerator. 3,676,401, Cl. 260-63.0cq.
Henry, Ormond Lee: *See—*
Drapen, Myron E.; and Henry, Ormond Lee, 3,675,330.
Herbell, Thomas P.: *See—*
Quatinetz Max; Weeton, John W.; and Herbell, Thomas P., 3,676,084.
Herberts, Kurt, Dr., & Co. vorm. Otto Louis Herberts: *See—*
Dobbelstein, Arnold; Hille, Hans-Dieter; and Momm, Anneliese Geb. Koziokek, 3,676,403.
Herbsman, Abraham M.; deceased (by Kates, Clarke Merle; administrator). Compositions of matter and method of treating internal combustion engine fuel gases. 3,676,090, Cl. 44-72.000.
Hercules Incorporated: *See—*
Dehm, Henry C.; and Mellow, Dale F., 3,676,533.
Spurlin, Harold M., 3,676,466.
Herderhorst, Wilfred W.: *See—*
Shultz, John E.; and Herderhorst, Wilfred W., 3,676,025.
Herman, Patricio. Method for joining abutting elements by concealed means. 3,675,312, Cl. 29-526.000.
Herrmann, Friedrich: *See—*
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, 3,675,371.
Herzhoff, Peter: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Heskett, Don E.; Hoover, Frank Kryder; and Burkhalter, Robert, Jr., to Morton-Norwich Products, Inc. Fluid treating cartridge with integral seal. 3,675,777, Cl. 210-232.000.
Hester, Jackson B., Jr., to Upjohn Company, The. Anorexigenic compositions comprising 6-alkyl-1,2,3, 4,5,6-hexahydroazepino 4,5-indoles as active ingredient and process of treatment. 3,676,558, Cl. 424-274.000.
Heston, Eugene E. Screen changer mounting. 3,675,934, Cl. 277-12.000.
Hetrick, Richard R., to Westinghouse Electric Corporation. Polyvinyl fluoride surfaced laminates. 3,676,290, Cl. 161-189.000.
Heugebaert, Frans Clement: *See—*
Willems, Jozef Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, 3,676,131.
Hewitt, Gordon Trent; and Giordano, Annie Sue, to Colgate-Palmolive Company. Fabric conditioning article and use thereof. 3,676,199, Cl. 117-109.000.
Hewitt, John H., to Goodyear Tire & Rubber Company. Automatic tension sensing apparatus for belt conveyor. 3,675,482, Cl. 73-144.000.
Hewlett-Packard Company: *See—*
Stephanoff, Nicholas N., 3,675,858.
Hexcel Corporation: *See—*
Hull, Harold Robert, 3,675,522.
Heyden, Herbert Frank. Yarn cones. 3,675,871, Cl. 242-118.300.
Hicks, David G.; and Varner, Lawrence P. Grout expansion pressure meter and method for using same. 3,675,493, Cl. 73-432.00r.
Hidaka, Tsuneo: *See—*
Nishikawa, Yukiyasu; and Hidaka, Tsuneo, 3,676,692.
Higashide, Eiji: *See—*
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.
Hight, Hanford Z.; and Lesky, Stephen, to Bonded Products, Inc. Internally sealing pipe joint. 3,676,254, Cl. 156-286.000.
Higuchi, Akio: *See—*
Tsukuma, Shin; and Higuchi, Akio, 3,675,862.
Higuchi, Takeru; and Hussain, Anwar, to Alza Corporation. Administration of alkali metal salts of salicylamide. 3,676,549, Cl. 424-44.000.
Hille, Hans-Dieter: *See—*
Dobbelstein, Arnold; Hille, Hans-Dieter; and Momm, Anneliese Geb. Koziokek, 3,676,403.
Himmelmann, Wolfgang: *See—*
Schulz, Gunter; Himmelmann, Wolfgang; and Randolph, August, 3,676,144.
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, to Agfa-Gevaert Aktiengesellschaft. Treatment of exposed silver halide emulsion with acidic hardening bath following by alkaline activating bath. 3,676,143, Cl. 96-111.000.
Hini, Paul, to Siemens Aktiengesellschaft. Ignition device for internal combustion engines. 3,675,636, Cl. 123-148.00e.
Hinkley, David F.; and Ellsworth, Robert L., to Merck & Co., Inc. Racemization of an alpha-methyl DOPA derivative. 3,676,482, Cl. 260-471.00a.
Hirohashi, Toshiyuki; Izumi, Takahiro; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Benzoxazepine derivatives. 3,676,460, Cl. 260-333.000.
Hirose, Takashi: *See—*
Kamata, Yoshihiro; and Hirose, Takashi, 3,676,322.
Hiroshima Kasei, Ltd.: *See—*
Miyachi, Kiyoichi; Hashino, Shinsuke; and Hongu, Tomokazu, 3,675,346.
Hirozawa, Koichiro, to Aisin Seiki Kabushiki Kaisha. Control mechanism for automatic speed change assembly. 3,675,512, Cl. 74-869.
Hirs assor. to said Graser: *See—*
Graser, Toni; and Hirs, Joseph, 3,675,635.
Hirs, Joseph: *See—*
Graser, Toni; and Hirs, Joseph, 3,675,635.
Hirshen, Sanford; and Van Der Ryn, Sim, to Hirshen/Van der Ryn. Endless inflatable device. 3,676,276, Cl. 161-17.
Hirshen/Van der Ryn: *See—*
Hirshen, Sanford; and Van Der Ryn, Sim, 3,676,276.
Hix, Charles M., Jr., to Arcadia Refining Company. Underwater storage device. 3,675,427, Cl. 61-.500.
Hixson, William J. Adjustable cam follower. 3,675,631, Cl. 123-90.520.
Ho, Irving T., to International Business Machines Corporation. Monolithic bipolar dynamic shift register. 3,676,863, Cl. 340-173.0ca.
Hoag, Don H., to Clarkson Industries, Inc. Sludge tank with self-cleaning screen and screen for use therein. 3,675,778, Cl. 210-237.000.
Hobbs, James W.; and Long, George W., to Phillips Petroleum Company. Control of fractionation column reboiler. 3,676,304, Cl. 202-160.000.
Hockings, Eric Francis: *See—*
Moss, Herbert Irwin; and Hockings, Eric Francis, 3,676,610.
Hodges, William & Co., Inc.: *See—*
Kesilman, Sol; Kravitz, Milton; and Penn, Hyman B., 3,675,598.
Hodgman Manufacturing Company, Inc.: *See—*
Hodgman, Willis K., Jr., 3,676,015.
Hodgman, Willis K., Jr., to Hodgman Manufacturing Company, Inc. Water motor. 3,676,015, Cl. 415-202.000.
Hoerner Waldorf Corporation: *See—*
Dutcher, Daniel P., 3,675,764.
Hoeschele, Guenther Kurt, to Du Pont de Nemours, E. I., and Company. 2,4-Bis (4-aminocyclohexylmethyl)cyclohexylamine. 3,676,495, Cl. 260-563.00r.
Hoffer, Max, to Hoffmann-La Roche Inc. 5,6-Dihydro-9, 8-dimethyl-3-nitro-8H imidazo (2-1-c) (1,4)oxazine. 3,676,439, Cl. 260-244.00r.
Hoffman-La Roche Inc.: *See—*
De Ritter, Elmer; and Raymond, Joseph Edward, 3,676,556.
Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, 3,676,467.
Hoffmann-La Roche Inc.: *See—*
Hoffer, Max, 3,676,439.
Richterich, Roland, 3,676,080.
Hofling, Rudolf: *See—*
Ernst, Alfons; and Hofling, Rudolf, 3,675,331.
Hofmann, Horst; and Katz, Helmut, to Siemens Aktiengesellschaft. Dispenser cathode structure. 3,676,731, Cl. 313-346.0dc.
Hohlfeld, Harald: *See—*
Schuller, Wolfgang; and Hohlfeld, Harald, 3,676,096.
Hokamura, Sadakazu: *See—*
Takiyama, Eiichiro; and Hokamura, Sadakazu, 3,676,524.
Holland Hitch Company: *See—*
Korodi, Miklos B.; and Runyan, Clarence R., 3,675,946.
Hollaway, John T.; and Pingry, Carl O., III, to International Business Machines Corporation. Data communication system incorporating device selection control. 3,676,859, Cl. 340-172.500.
Hollister, Robert H.; Wilburn, Garlington C.; and Green, Kurt G., to Westinghouse Electric Corporation. Circuit interrupter. 3,676,623, Cl. 200-146.00r.
Holly, James A., to Hollymatic Corporation. Electrical connector. 3,676,835, Cl. 339-73.000.
Hollymatic Corporation: *See—*
Holly, James A., 3,676,835.
Holmes, Frank; Arias, Henry, Jr.; and Read, George, to Ajax Hardware Manufacturing Corporation. Adjustable bracket assembly for use as a rear drawer slide bracket and the like. 3,675,883, Cl. 248-251.000.
Holtz, William E., Jr.: *See—*
Harwood, Charles C.; and Holtz, William E., Jr., 3,675,855.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Yozaburo, 3,675,944.
Honda, Masakazu: *See—*
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.
Honeywell, Inc.: *See—*
Cummings, John P.; and Berg, Richard E., 3,676,321.
Kane, Hugh, 3,676,628.
Murata, Eiji; and Ito, Kohuku, 3,675,540.
Honeywell Information Systems Inc.: *See—*
Lee, Fred S., 3,676,873.
Pichal, Henri T., 3,676,785.
Ruth, Richard L., 3,676,861.
Honeywell Information systems, Inc., mesne: *See—*
Coleman, Larry R., 3,675,524.
Finch, DeVer C.; and Kennedy, James A., 3,676,858.
Honeywell Information Systems Italia: *See—*
Kassabgi, Georges; and Compare, Giampiero, 3,676,746.
Hongu, Tomokazu: *See—*
Miyachi, Kiyoichi; Hashino, Shinsuke; and Hongu, Tomokazu, 3,675,346.

Hood, Edwin Elliott: *See—*
Frei, Karl; and Hood, Edwin Elliott, 3,675,740.
Frei, Karl; and Hood, Edwin Elliott, 3,675,741.
Hook, Melvin S., to Burns Machine Co. Manual override pressure operated switch. 3,676,619, Cl. 200-81.00h.
Hoover Ball and Bearing Company: *See—*
Ziegler, William E., 3,675,521.
Hoover, Frank Kryder: *See—*
Heskett, Don E.; Hoover, Frank Kryder; and Burkhalter, Robert, Jr., 3,675,777.
Hopkin, Peter. Pelletizing apparatus. 3,676,029, Cl. 425-67.000.
Hoppstock, Frederic H.; Falvo, Louis A.; and Frech, Kenneth J., to Goodyear Tire & Rubber Company, The. Preparation of diolefins from tertiary and secondary alkyl halides containing only four carbon atoms in the main chain. 3,676,518, Cl. 260-680.00r.
Hopwood-Jones, Charles Douglas, to Northern Electric Company Limited. Orienting and feeding small discs. 3,675,755, Cl. 198-33.00r.
Hori, Koichi: *See—*
Takezawa, Isoe; Muto, Masataro; and Hori, Koichi, 3,675,606.
Horn, Harold Edwin; Kimball, Bruce Allan; and Godzicki, Martin Michael, to CPC International Inc., Dextrose icings. 3,676,155, Cl. 99-139.000.
Hornig, Anneliese, nee Munich: *See—*
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.
Hornig, Lothar Heinz: *See—*
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.
Horsley, Orville E.: *See—*
Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., 3,676,559.
Hortensius, William: *See—*
Fattor, Arthur P.; and Hortensius, William, 3,675,898.
Horvath, Bertalan, to Phillips Petroleum Company. Polymerization using a supported chromia activated with a tin on gallium compound. 3,676,417, Cl. 260-94.90d.
Horwitz, Sam: *See—*
Catlett, John C., 3,675,370.
Hosegood, Samuel Brittan: *See—*
Rennie, Compton Alexander; Lockett, George Edward; and Hosegood, Samuel Brittan, 3,676,297.
Hoskinson, Eugene A.: *See—*
Millis, Hugh L., Jr.; and Hoskinson, Eugene A., 3,676,652.
Howitt, Henry Gazeley, to A.B. Electronic Components Limited. Slide potentiometer. 3,676,826, Cl. 338-183.000.
Hoyle, Albert G., to Kendall Company, The. Low-density bonded nonwoven fabrics and process therefor. 3,676,288, Cl. 161-158.000.
Hsieh, Henry L.; and Buck, Ollie G., to Phillips Petroleum Company. Tetrapolymers and process for production thereof. 3,676,407, Cl. 260-77.50r.
Hu, Shih-en, to Esso Research and Engineering Company. Lubricating oil compositions containing improved sludge inhibiting additives. 3,676,346, Cl. 252-47.500.
Hu, Shih-En, to Esso Research and Engineering Company. Dispersants prepared from polyamines and alkaryl carboxylic acids. 3,676,483, Cl. 260-475.00n.
Hubbell, Harvey, Incorporated: *See—*
Gartland, Albert J., Jr.; and D'Amato, Michael J., 3,676,829.
Hubele, Adolf; and Rohr, Otto, to Ciba-Geigy Corporation. N-[3-Trifluoromethyl-4-chlorophenyl]-carbamates. 3,676,457, Cl. 260-347.400.
Huber, J. M., Corporation: *See—*
Aboytes, Peter, 3,676,256.
Voet, Andries, 3,676,255.
Huber, John F., to Unidynamics/Phoenix, Inc. Collision survival system. 3,675,942, Cl. 280-150.0ab.
Hubert, Theo: *See—*
Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, 3,676,759.
Hubinger Company, The: *See—*
Elizer, Lee H., 3,676,205.
Elizer, Lee H., 3,676,423.
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, to United States of America, Army. Filled cold-curing acrylic resin as a splinting material. 3,675,327, Cl. 32-6.000.
Hughes Aircraft Company: *See—*
Miller, Larry R., 3,676,660.
Hughes, Garyth: *See—*
Bickerdike, Robert Lewis; and Hughes, Garyth, 3,676,160.
Hughes, Richard J.: *See—*
Bidell, Frederick W.; and Hughes, Richard J., 3,676,794.
Huizen, Corstiaan Le Comte, to N.V. Hollandse Signaalapparaten. Apparatus for generating an analogue sawtooth voltage, the slope of which corresponds with the mean slope of a stepped sawtooth voltage. 3,676,784, Cl. 328-181.000.
Hulbert, Larry Norman: *See—*
Hall, Ronald Edward; and Hulbert, Larry Norman, 3,676,848.
Hull, Harold Robert, to Hexcel Corporation. Method and apparatus for stacking sheets. 3,675,522, Cl. 83-14.000.
Hulstein, Calvin, to Monsanto Company. Variable orifice extrusion head. 3,676,039, Cl. 425-466.000.
Humphrey, John G., to General Electric Company. Emphasized carrier circuit with integral AFC operation. 3,676,582, Cl. 178-5.8af.
Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., to Cole National Corporation. Key cutting machine. 3,675,536, Cl. 90-13.050.
Hunsberger, Arnold: *See—*
Neumann, Malcolm A.; and Hunsberger, Arnold, 3,675,378.
Hunt, Sydney Edwin: *See—*
Lindsey, Alan Sidney; and Hunt, Sydney Edwin, 3,676,399.
Hunter, Calvin W., to Clark Equipment Company. Transfer car guidance system. 3,675,589, Cl. 104-247.000.
Hunter, Lloyd Wayne, to Exact Electronics, Inc. Controllable waveform generator. 3,676,698, Cl. 307-228.000.
Huntington Rubber Mills: *See—*
Caldwell, William F., 3,675,881.
Hunts, Barney D.; and Lyon, William O., to Singer Company, The. Apparatus for rotating work for thin film deposition. 3,675,624, Cl. 118-503.000.
Hurst, Richard J.: *See—*
Baker, William J.; and Hurst, Richard J., 3,675,861.
Hussain, Anwar: *See—*
Higuchi, Takeru; and Hussain, Anwar, 3,676,549.
Hutter, Charles G., III: *See—*
Crowley, Charles L.; Grosholz, James R.; and Hutter, Charles G., III, 3,675,653.
Hydronautics-Israel, Ltd.: *See—*
Linenberg, Amos, 3,675,466.
Hysan Products Company: *See—*
Brownstein, Henry J., 3,675,254.
I-T-E Imperial Corporation: *See—*
Garzon, Ruben D., 3,676,737.
Reighter, David H., 3,675,392.
I'Anson, Thomas. Chipper cutter and holders therefor. 3,675,693, Cl. 144-241.000.
Ibrahim, Fayez F., to Clark Equipment Company. Refrigerated display case. 3,675,440, Cl. 62-256.000.
Ichikawa, Hirohiko: *See—*
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.
I.C.I. Organics Inc.: *See—*
Perrino, Albert C.; and Israel, Michael G., 3,676,406.
IIT Research Institute: *See—*
Van Den Heuvel, Anthony P.; Richter, Ronald W.; and Joshi, Shrinivas G., 3,676,721.
Ikeda, Yukisaburo: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.
Ikegai Tekko Kabushiki Kaisha: *See—*
Izumi, Tadayoshi, 3,675,517.
Ikejmima, Yoritaka: *See—*
Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, 3,675,324.
Iler, Ralph K.: *See—*
Chay, Dong M.; and Iler, Ralph K., 3,676,086.
Ilford Limited: *See—*
Sharples, Allan; Rostron, Arthur John; and Mc Gibbon, Graeme, 3,676,688.
Imperial Chemical Industries Limited: *See—*
Campbell, Alastair; and Robinson, Peter, 3,676,507.
Edwards, Harry, 3,676,265.
Foden, Frederick Roger; and O'Mant, Derrick Michael, 3,676,464.
Nield, Eric, 3,676,404.
Pacini, Bruno Marcio; Price, Desmond Alfred; and Parikh, Anil Chandrakant, 3,675,408.
Smith, Frank; and Entwisle, John Hubert, 3,676,325.
Smith, Leslie Harold, 3,676,493.
Snell, Brian Kenneth; and Bishop, Nigel Douglas, 3,676,443.
Inagaki, Shotaro: *See—*
Kuramoto, Yoshio; and Inagaki, Shotaro, 3,675,558.
Indiana University Foundation: *See—*
Muhler, Joseph C., 3,676,112.
Industrial Nucleonics Corporation: *See—*
Rice, James S., 3,676,295.
Industrial Washing Machine Corporation: *See—*
Sadwith, Howard M., 3,675,665.
Ingalls, James E. Method of and apparatus for applying labels to articles or packages. 3,676,257, Cl. 156-351.000.
Ingelman, Bjorn G.; and Ceska, Miroslav, to Pharmacia AB. Method for determining endohydrolases capable of breaking down polysaccharides and reagents for carrying out the method. 3,676,303, Cl. 195-103.500.
Ingram, David John; and Maillardet, Frederick James, to General Electric and English Electric Companies, Limited, The. Winch arrangements. 3,675,794, Cl. 214-13.000.
Innotech Corporation: *See—*
Merrin, Seymour, 3,676,756.
Institut Elektrosvari imeni E. O. Patona: *See—*
Esiban, Eduard Migranovich; and Danchenko, Mikhail Evgenievich, 3,676,639.
Institut fur angewandte Physik der Universitat Bern: *See—*
Weber, Heinz, 3,676,796.
Instrumentation Specialties, Inc.: *See—*
Allington, Robert W., 3,676,686.
Inter-Locked Fasteners Limited: *See—*
Winslade, Harry Herbert, 3,675,280.
Interlas N.V.: *See—*
Stijger, Adrianus G., 3,675,963.
International Business Machines Corporation: *See—*
Abernathy, Roger E.; and Mitrofanoff, Nicholas S., 3,676,852.

Carlsen, Donald W.; Kotla, John J.; and Parker, Arden A., 3,676,646.
Collier, William W.; and Smith, Ronald M., 3,676,860.
Donofrio, Nicholas M.; and Pomeranz, Jehoshua N., 3,676,704.
Dupnock, Andrew; Gorey, Edward F.; and Keenan, William A., 3,676,775.
Eastman, Hal P., 3,676,851.
Gersbach, John E., 3,676,703.
Ho, Irving T., 3,676,863.
Hollaway, John T.; and Pingry, Carl O., III, 3,676,859.
Judge, Robert L.; and Pearson, Eugene S., 3,676,832.
Knepper, Delbert M., Sr., 3,676,689.
Kozol, Eugene T.; and Wohl, Robert J., 3,676,588.
Medvecky, Bartholomew P.; Oberai, Avtar S.; and Platt, Alan, 3,676,231.
Metreaud, Claude G., 3,675,563.
Moreau, Wayne M.; and Rottmann, Hans R., 3,676,002.
Putnam, David T., 3,675,373.
Shattuck, Meredith David; and Weiche, William J., 3,676,210.
Terry, David W., 3,676,853.
Wiedmann, Siegfried K., 3,676,713.
Wiedmer, Fritz S., 3,676,615.
Wiedmer, Fritz S., 3,676,616.

International Computers Limited: *See—*
Jackson, Howard Rodney, 3,676,857.
Turner, Ian, 3,676,874.

International Harvester Company: *See—*
Asmus, Rodger W., 3,675,421.
Fischer, Raymond G., 3,675,945.
Luft, Robert G., 3,675,966.

International Nickel Company, The: *See—*
Badia, Frank Arthur; and Kirby, Gary Neil, 3,676,226.

International Salt Company: *See—*
Jacoby, Charles H., 3,676,078.

International Silver Company, The: *See—*
Landen, William James; and Lundquist, Gunnar, 3,675,265.

International Synthetic Rubber Company Limited, The: *See—*
Duck, Edward William; Ridgewell, Brian John; and Locke, John Michael, 3,676,409.

International Telephone and Telegraph Corporation: *See—*
Beeli, Johann Battesta, 3,676,726.
Johnson, George S., 3,676,833.
Keller, William Fredrick; and Domyan, Frank Francis, 3,675,538.

Intertek Controls, Inc.: *See—*
Millis, Hugh L., Jr.; and Hoskinson, Eugene A., 3,676,652.

Irisova, Nataliya Alexandrovna: *See—*
Vinogradov, Evgeny Alexandrovich; and Irisova, Nataliya Alexandrovna, 3,676,808.

Irvine, Alvin R., to United States of America, Atomic Energy Commission. Impact energy absorber. 3,675,746, Cl. 188-1.00c.

Isard, Arsene; and Weiss, Francis, to Ugine Kuhlmann. 4-Hydroxy-1-methylol 6-oxa(3.2.1.1 ^{3,8}) tricylononane. 3,676,465, Cl. 260-346.200.

Ishizaka, Sunao, to Nippon Kogaku K.K. Device for correcting the open aperture ratio of interchangeable lenses in a camera self-containing a TTL exposure meter. 3,675,550, Cl. 95-10.00c.

Israel, Michael G.: *See—*
Perrino, Albert C.; and Israel, Michael G., 3,676,406.

Ito, Kohuku: *See—*
Murata, Eiji; and Ito, Kohuku, 3,675,540.

Ito, Masaharu: *See—*
Sanada, Noriaki; and Ito, Masaharu, 3,675,562.

Ito, Mitsuru. Blank for forming a garment. 3,675,246, Cl. 2-115.000.

Ito, Shin: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.

Ito, Tadashi: *See—*
Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, 3,675,547.

Itoh, Yukio: *See—*
Morita, Akiyoshi; and Itoh, Yukio, 3,676,583.

ITT Industries, Inc.: *See—*
Beller, Hans Albert, 3,675,744.
Ziegler, Helmut, 3,675,308.

Iwakura, Makoto: *See—*
Shimizu, Tetsuji; and Iwakura, Makoto, 3,676,734.

Iwasaki Tsushinki Kabushiki Kaisha; a/k/a: *See—*
Uchida, Kozo, 3,676,708.

Iwatsu Electric Co., Ltd.: *See—*
Uchida, Kozo, 3,676,708.

I.W.S. Nominee Company Limited: *See—*
Brown, Thomas Desmond, 3,676,057.

Izakson, Khanaan Ilich. Hillside combine harvester. 3,675,404, Cl. 56-209.000.

Izumi, Tadayoshi, to Ikegai Tekko Kabushiki Kaisha. Adaptive and numerical control machine tool. 3,675,517, Cl. 82-2.00b.

Izumi, Takahiro: *See—*
Hirohashi, Toshiyuki; Izumi, Takahiro; and Yamamoto, Hisao, 3,676,460.

Jackson, Byron, Inc.: *See—*
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,675,900.

Jackson, Carl Thomas, to True Temper Corporation. Apparatus for producing fiber glass articles. 3,676,258, Cl. 156-392.000.

Jackson, George E., to Union Carbide Corporation. Simulated-weave, warp-knit fabric, and method for making the same. 3,675,447, Cl. 66-192.000.

Jackson, Howard Rodney, to International Computers Limited. Data storage systems. 3,676,857, Cl. 340-172.500.

Jackson, Robert G., to Conch International Methane Limited. Offshore storage tanks. 3,675,431, Cl. 61-46.000.

Jackson, Steven B.; Freieich, Ernest; and Hammond, James D., to Fluor Corporation. Low pressure ethylene recovery process. 3,675,435, Cl. 62-26.000.

Jacoby, Charles H., to International Salt Company. Salt solution mining and geothermal heat utilization system. 3,676,078, Cl. 23-299.000.

James, Daniel S., to Du Pont de Nemours, E. I., and Company. Aqueous dyeing of acid-dyeable polyamide fibers using yellow-to-orange disazo dyes. 3,676,050, Cl. 8-41.00b.

Jamesbury Corporation: *See—*
Schwartz, Frederich William, Jr., 3,675,679.

Japan Atomic Energy Research Institute: *See—*
Kinbara, Setsuro; and Kumahara, Tadashi, 3,676,783.
Takehisa, Masaaki; Senrui, Shiro; and Nakajima, Hayato, 3,676,419.

Jauquet, Christian, to Ateliers de Construction Electriques Charleroi (ACEC). Apparatus for the centralized control of the operation of trains. 3,676,669, Cl. 146-182.00r.

Javora, Henry J.: *See—*
Malandro, George H.; and White, Peter, 3,676,849.

Jeans, Graham Wilton. Method of making articles from fibre board. 3,675,692, Cl. 144-317.000.

Jensen, Robert A.; and Johnson, Orville M., to Minnesota Mining and Manufacturing Company. Adhesive tape dispenser. 3,676,266, Cl. 156-521.000.

Jentsch, Dietrich, to Dorken & Mankel KG, Firma. Closing device for doors and analogous structural elements. 3,675,270, Cl. 16-53.000.

Jerome, Chester W. Apparatus for removing excess of material projecting from the true periphery of a bowling ball without modifying such true periphery. 3,675,535, Cl. 90-11.00r.

Jetter, Evelyn Speter: *See—*
Einthoven, Willem Gerard; Jetter, Evelyn Speter; and Wheatley, Carl Franklin, Jr., 3,676,229.

Jetzt, John J., to Bell Telephone Laboratories, Incorporated. Video inversion technique to counteract slowly moving interference patterns in a vidio communications system. 3,676,589, Cl. 178-6.800.

Jeumont-Schneider: *See—*
Wiart, Albert; and Cynober, Simon, 3,675,585.

Johansson, Hans A. V. Bath litter for therapeutical treatment. 3,675,255, Cl. 5-82.000.

Johansson, John G.: *See—*
Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,676,447.

Johansson, Ronald C.; and Weeklund, Wayne Donald, to Minnesota Mining and Manufacturing Company. Deformable fin spring connector. 3,676,574, Cl. 174-87.000.

John, Ansel N. One step lock and release cycle stand. 3,675,784, Cl. 211-22.000.

Johns-Manville Corporation: *See—*
Quint, Stephen Mark; and Dalton, John Junior, 3,676,196.

Johnson & Johnson: *See—*
Korpman, Ralf, 3,676,202.
Ruffo, Angelo P., 3,675,403.

Johnson, Carl E.: *See—*
Roberts, Melvin L.; Johnson, Carl E.; and Miller, Richard C., 3,676,356.

Johnson, George S., to International Telephone and Telegraph Corporation. Hermaphorodit electrical connector. 3,676,833, Cl. 339-49.000.

Johnson, Howard L.: *See—*
Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,676,447.

Johnson, James W., to Telephonic Equipment Corporation. Spike monitoring apparatus. 3,676,605, Cl. 179-18.0be.

Johnson, Marvin M.; and Tabler, Donald C., to Phillips Petroleum Company. Hydrogenation with a molybdenum arsenic catalyst. 3,676,332, Cl. 208-143.000.

Johnson, Matthey & Co., Limited: *See—*
Selman, Gordon Leslie, 3,676,114.

Johnson, Orville M.: *See—*
Jensen, Robert A.; and Johnson, Orville M., 3,676,266.

Johnson, Paul H.: *See—*
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.

Johnson, Roger L.: *See—*
Buschbom, Floyd E.; Hansen, Glen D.; and Johnson, Roger L., 3,675,758.

Johnston, Earnest L.: *See—*
Christena, Ray C.; and Johnston, Earnest L., 3,676,291.
Christena, Ray C.; and Johnston, Earnest L., 3,676,424.

Johnston Laboratories, Inc.: *See—*
Waters, John R., 3,676,679.

Jones, Allen J., to Michel Lumber Company. Recirculating dryer system. 3,675,600, Cl. 110-8.00r.

Jones, David A., to Control Data Corporation. Low-level signal detector circuit. 3,676,710, Cl. 307-289.000.

Jones, Faber B.: *See—*
Doss, Richard C.; and Jones, Faber B., 3,676,201.

Jones, Ferris E. Fishing lure. 3,675,358, Cl. 43-42.090.
Jones, John Darrell: *See—*
Fulton, Michael; Jones, John Darrell; and Pearce, Christopher A., 3,676,420.
Jones, Rexford W.; and Thompson, William B., to Staley, A. E., Manufacturing Company. Multi-color reproductions. 3,676,121, Cl. 96-13.000.
Jonke, Joseph L.: *See—*
Segerdahl, Roy R.; and Jonke, Joseph L., 3,676,821.
Jordan, James I., Jr. Separation of purified vinylidene chloride. 3,676,306, Cl. 203-8.000.
Jorgensen, Adam A.; Bentley, William; and Urycki, Edward, to Stromberg-Carlson Corporation. Printed circuit card arrangement. 3,676,747, Cl. 317-101.000.
Joshi, Shrinivas G.: *See—*
Van Den Heuvel, Anthony P.; Richter, Ronald W.; and Joshi, Shrinivas G., 3,676,721.
Judge, Robert L.; and Pearson, Eugene S., to International Business Machines Corporation. Connector. 3,676,832, Cl. 339-75.00m.
Juel, Leslie H. Method and apparatus for controlling orientation of needle-like carbon particles in extruded carbon stock. 3,676,535, Cl. 264-29.000.
Juels, Ronald J.: *See—*
Staffin, Robert; Ricci, Roy J.; and Juels, Ronald J., 3,676,647.
Kaar, Kenneth B.: *See—*
Weyant, Romer G.; and Kaar, Kenneth B., 3,675,800.
Kabushiki Kaisha Daini Seikosha: *See—*
Sakuma, Tadashi, 3,675,411.
Kabushiki Kaisha Kawai Gakki Susakusho: *See—*
Watanabe, Takashi, 3,675,320.
Kabushiki Kaisha Koparu: *See—*
Kikuchi, Tomio; and Arai, Kiyoyuki, 3,675,548.
Kabushiki Kaisha Rinnai Seisakusho: *See—*
Soma, Shinichi, 3,676,047.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Shimizu, Tetsuji; and Iwakura, Makoto, 3,676,734.
Kadin, Saul B., to Pfizer Inc. Oxobenzofuran carboxamides. 3,676,463, Cl. 260-343.300.
Kagi, Dieter: *See—*
Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, 3,676,467.
Kaiser Aluminum & Chemical Corporation: *See—*
Bell, Norman; and Lam, Hung-Kei H., 3,676,077.
Nuscher, Edwin H.; and Slater, Jack D., 3,676,235.
Kaiser, Carl; and Zirkle, Charles L., to Smith Kline & French Laboratories. 1-(Hydroxy-1-phenyl-4-aminobutenyl) adamantane derivatives. 3,676,435, Cl. 260/240/0tc.
Kaldor, Robert M.; Borruso, Joseph V.; and Goldbaum, Elliott, to Signal-Stat Corporation, mesne. Vehicle lamp. 3,676,834, Cl. 339-59.00l.
Kalle Aktiengesellschaft: *See—*
Scheler, Siegfried; and Munder, Johannes, 3,676,132.
Uhlig, Fritz; and Braun, Jurgen, 3,676,134.
Kallmeyer, James D.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.
Kalopissis, Gregoire: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, 3,676,546.
Kalopissis, Gregoire; and Bugaut, Andree, to L'Oreal. Dyeing hair with derivatives of nitroparaphenylenediamine. 3,676,049, Cl. 8-10.000.
Kamata, Yoshihiro; and Hirose, Takashi, to Furukawa Electric Company, The. Apparatus and method for continuous production of electrolytically treated wires. 3,676,322, Cl. 204-206.000.
Kamborian, Jacob S.: *See—*
Kamborian, Jacob S.; Harriman, Allen C.; and Vornberger, Karl F., 3,675,260.
Kamborian, Jacob S.; Harriman, Allen C.; and Vornberger, Karl F., to Kamborian, Jacob S. Apparatus for applying cement between a shoe upper and a shoe insole. 3,675,260, Cl. 12-12.000.
Kampf, Leo. Brick treatment. 3,676,187, Cl. 117-70.00a.
Kampmann, Friedrich-Wilhelm: *See—*
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.
Kampmier, Thomas R., to Berol Corporation, mesne. Manually releasable vacuum holding base construction. 3,675,886, Cl. 248-363.000.
Kanady, William E., to Esso Production Research Company. Conducting operations in a well through a normally closed valve. 3,675,718, Cl. 166-297.000.
Kandler, Joachim: *See—*
Grimm, Dieter; Kandler, Joachim; Merkenich, Karl; and Pirig, Wolf-Dieter, 3,676,352.
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim and Gleisberg, Dietrich, 3,676,165.
Kane, Hugh, to Honeywell Inc. Reversible moving contact arrangement. 3,676,628, Cl. 200-166.0bc.
Kaneko, Haruo; and Yano, Kaoru, to Nippon Electric Company, Limited. Nonlinear encoder. 3,676,600, Cl. 179-15.55t.
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, to Nippon Hoso-Kyokai. Converting equipment of standard television broadcasting signals. 3,676,585, Cl. 178-6.800.
Kaneko, Thomas M.; Schmolka, Irving R.; and Compton, John W., to BASF Wyandotte Corporation. Corrosion inhibitor for hydrochloric acid pickling of steele. 3,676,354, Cl. 252-147.000.
Kangle, Purushottam Janardan; Ramanathan, Visvanathan; and Argay, Rudolf, to Ciba-Geigy AG. Process for dyeing and printing textile materials made from synthetic organic fibres. 3,676,051, Cl. 8-65.000.
Kantola, Robert A.; and Boothe, Willis A., to General Electric Company. Open-loop fluidic analog accelerometer. 3,675,473, Cl. 73-70.100.
Kantor, Simon W.: *See—*
Agens, Maynard C.; and Kantor, Simon W., 3,676,285.
Kaplow, Milton: *See—*
Glasser, George; Sjonvall, Ragnar Edward; and Kaplow, Milton, 3,676,154.
Kapun, Walter, to Wiener Schwachstromwerke Gesellschaft m.b.H. Arrangement for discharging predetermined amounts of molten metal from a vessel. 3,675,911, Cl. 266-38.000.
Karady, Sandor: *See—*
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., 3,676,480.
Karkutt, Reimund: *See—*
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, 3,675,971.
Karlin, George H.: *See—*
McQuary, Kenneth L.; Karlin, George H.; and Lane, Bert, 3,675,301.
Kartasuk, Raymond H.; and Smierciak, Walter, to Wilton Corporation. Vise assembly. 3,675,916, Cl. 269-69.000.
Kasai, Toshiyuki: *See—*
Yamamoto, Tadaaki; and Kasai, Toshiyuki, 3,675,986.
Kasper, Lothar: *See—*
Gutlhuber, Friedrich; and Kasper, Lothar, 3,675,841.
Kasperkovitz, Wolfdietrich Georg, to U.S. Philips Corporation. Shift register. 3,676,701, Cl. 307-221.00r.
Kassabgi, Georges; and Compare, Giampiero, to Honeywell Information Systems Italia. Compatible modular circuit board connector. 3,676,746, Cl. 317-101.0cc.
Katai, Mihaly: *See—*
Hajduk, Jeno; and Katai, Mihaly, 3,675,852.
Kates, Clarke Merle: *See—*
Herbsman, Abraham M., 3,676,090.
Katsuragawa Denki Kabushiki Kaisha: *See—*
Kinoshita, Koichi, 3,676,117.
Katz, Helmut: *See—*
Hofmann, Horst; and Katz, Helmut, 3,676,731.
Katz, Howard: *See—*
Sternberg, Hyman M.; Piacesi, Dante, Jr.; and Katz, Howard, 3,675,577.
Katzenstein, William: *See—*
Schultz, Herman S.; Katzenstein, William; and Williams, Earl P., 3,676,408.
Kaufman, Jack: *See—*
Lund, Alvin R.; and Kaufman, Jack, 3,675,807.
Kawaguchi, Kanzi: *See—*
Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, 3,676,110.
Kawai, Hisasi: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.
Kawai, Mituo: *See—*
Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, 3,676,110.
Kay, Leslie; Maginness, Maxwell Glynn; and Cook, Graham Bramwell, to National Research Development Corporation. Apparatus and method for images of the interior structure of solid objects. 3,675,472, Cl. 73-67.50r.
Keenan, William A.: *See—*
Dupnock, Andrew; Gorey, Edward F.; and Keenan, William A., 3,676,775.
Keene Corporation: *See—*
Baranowski, Leslie B., 3,675,395.
Keene, William A., to Phillips Petroleum Company. Pipeline construction. 3,675,432, Cl. 61-72.100.
Kehr, Clifton L.; and Wszolek, Walter R., to Grace, W. R., & Co. Water-resistant materials, and methods of production and use of same. 3,676,195, Cl. 117-93.310.
Kehr, Clifton L.; and Wszolek, Walter R., to Grace, W. R., & Co. Laminate and process for laminating with polythiol polyene reaction product. 3,676,283, Cl. 161-88.000.
Keil, Karl Diether: *See—*
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,414.
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,415.
Kelco Company: *See—*
Wintersdorff, Peter, 3,676,157.
Keller, Allen B.: *See—*
Ward, John T.; and Keller, Allen B., 3,675,614.
Keller, Werner, to Siemens Aktiengesellschaft. Contact-free potentiometer. 3,676,819, Cl. 338-32.00r.
Keller, William Fredrick; and Domyan, Frank Francis, to International Telephone and Telegraph Corporation. Hydraulic control system. 3,675,538, Cl. 91-1.000.
Kelly, George J., Jr.: *See—*
Schroeder, Kenneth H.; and Kelly, George J., Jr., 3,676,219.

Kempthorne, Richard Lewis, to Sprayon Research Corporation. Method for spraying a high density insulating mat. 3,676,170, Cl. 117-16.000.

Kendall Company, The: *See—*
Hoyle, Albert G., 3,676,288.
Taylor, Glenn N., 3,675,658.
Vida, Julius A., 3,676,454.

Kennedy, George C., to Teledyne, Inc. Method for manufacturing diamonds in a hydrogen free environment. 3,676,069, Cl. 23-209.100.

Kennedy, James A.: *See—*
Finch, DeVer C.; and Kennedy, James A., 3,676,858.

Kerber, Elwyn W.: *See—*
Collins, Neil E.; Kerber, Elwyn W.; and Neville, Raymond R., 3,676,668.

Kern, Loyd R.: *See—*
Faulk, Joseph H.; Kern, Loyd R.; and King, Graham E., 3,675,728.

Kerr-McGee Chemical Corporation: *See—*
Goens, Duane N.; and Clapper, Thomas W., 3,676,315.

Kerrigan, James Edward: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, 3,676,543.

Kershaw Manufacturing Company, Inc.: *See—*
Kershaw, Royce G., 3,675,580.

Kershaw, Royce G., to Kershaw Manufacturing Company, Inc. Apparatus for replacing old cross tie with new cross tie. 3,675,580, Cl. 104-9.000.

Kesilman, Sol; Kravitz, Milton; and Penn, Hyman B., to Hodges, William & Co., Inc. Adjustable shelving. 3,675,598, Cl. 108-144.000.

Khoe, Teng H.: *See—*
Rheineck, Alfred E.; Nielsen, Paul L.; and Khoe, Teng H., 3,676,384.

Kienzle Apparate GmbH: *See—*
Schuh, Eduard, 3,675,504.

Kiess Instruments, Inc.: *See—*
Kiess, Raymond W., 3,676,007.

Kiess, Raymond W., to Kiess Instruments, Inc. Direct reading filter photometer. 3,676,007, Cl. 356-184.000.

Kihlstedt, Per G., to AB Cold-Bound Pellets. Pre-treatment of metal-bearing mineral products. 3,676,104, Cl. 75-3.000.

Kikuchi, Tomio; and Arai, Kiyoyuki, to Kabushiki Kaisha Koparu. Exposure time indicating device for photographic cameras equipped with an electronically controlled shutter. 3,675,548, Cl. 95-10.0ct.

Kim, Dong W., to Monsanto Company. Process for forming high strength spunbonded fabric by autogenous bonding of filaments. 3,676,244, Cl. 156-181.000.

Kim, Sang-Chul, to General Electric Company. Circuit utilizing magnetized cores for sequentially flashing photoflash lamps. 3,676,044, Cl. 431-95.000.

Kimball, Bruce Allan: *See—*
Horn, Harold Edwin; Kimball, Bruce Allan; and Godzicki, Martin Michael, 3,676,155.

Kimball, Lawrence W.: *See—*
Schreurs, Willy P.; and Kimball, Lawrence W., 3,676,176.

Kinbara, Setsuro; and Kumahara, Tadashi, to Japan Atomic Energy Research Institute. Waveform discriminating circuit. 3,676,783, Cl. 328-117.000.

King, Graham E.: *See—*
Faulk, Joseph H.; Kern, Loyd R.; and King, Graham E., 3,675,728.

Kinner, Gotthard: *See—*
Bauer, Franz; Besemer, Karl Friedrich; and Kinner, Gotthard, 3,676,776.

Kinoshita, Koichi, to Katsuragawa Denki Kabushiki Kaisha. Method of electrophotography. 3,676,117, Cl. 96-1.00r.

Kirby, Gary Neil: *See—*
Badia, Frank Arthur; and Kirby, Gary Neil, 3,676,226.

Kirch, Paul W. Applicatory-liquid feeding and applying apparatus. 3,676,010, Cl. 401-188.

Kirstahler, Alfred: *See—*
Berg, Markus; Fries, Walter; and Kirstahler, Alfred, 3,676,340.
Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, 3,676,338.

Kislov, Vladimir Grigorievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Kiss, Bela: *See—*
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.

Kisten, Jurgen Manfred, to Radiometer A/S. Electrode, half cell and electrode component for the measurement of electromotive force. 3,676,319, Cl. 204-195.00f.

Kitowski, George J. Coin holder with removeable mounting bracket. 3,675,664, Cl. 133-6.000.

Kizilyaev, Anatoly Serafimovich: *See—*
Osmolovsky, Jury Anatolievich; and Kizilyaev, Anatoly Serafimovich, 3,675,452.

Klawitter, Vernon L. Power vacuum truck. 3,675,267, Cl. 15-340.

Klima, Frank J.; and Duncan, James D., to Gulf Oil Corporation. Method of forming in place a gelled suspension explosive. 3,676,236, Cl. 149-41.000.

Kline, Donald D., to Commercial Electronics, Inc. Television camera overexposure warning system. 3,676,587, Cl. 178-7.200.

Klose, Karl W., to Cooper Tire & Rubber Company. Tire awling apparatus. 3,675,520, Cl. 83-2.000.

Kloss, Wilfried: *See—*
Eggensperger, Heinz; Franzen, Volker; and Kloss, Wilfried, 3,676,471.

Klundt, Irwin L.: *See—*
Biel, John Hans; and Klundt, Irwin L., 3,676,492.

Knapsack Aktiengesellschaft: *See—*
Gerhardt, Wilfried; and Harnisch, Heinz, 3,676,100.
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.

Knecht, Walter L. Flooring construction. 3,675,384, Cl. 52-250.000.

Knepper, Delbert M., Sr., to International Business Machines Corporation. Optical code generating apparatus. 3,676,689, Cl. 250-219.000.

Knerr, Hugh S. Ship or boat hull construction. 3,675,605, Cl. 114-61.000.

Knowles, Peter M.: *See—*
Moseley, Royston L.; and Knowles, Peter M., 3,676,286.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Irritant composition comprising N-dihaloacetyl-4-alkylcyclohexylamine. 3,676,562, Cl. 424-320.000.

Knudsen, Ra-mond G.; Price, James W.; and Olson, Gene E., to Snap-On Tools Corporation. Wrench splines, spline drives and similar couplers. 3,675,516, Cl. 81-121.000.

Koba-ashi, Tunekazu: *See—*
Masuda, Noboru; and Koba-ashi, Tunekazu, 3,676,828.

Kobayashi, Akihiro, to Nittan Company Limited. Ionization smoke detector. 3,676,681, Cl. 250-83.6ft.

Kobayashi, Fukashi; Ono, Mitsuaki; and Kuroe, Akio, to Matsushita Electric Industrial Co., Ltd. Curie point magnetic tape duplicating apparatus wherein the master and slave tapes are wound on a single take-up reel. 3,676,612, Cl. 179-100.20e.

Kobayashi, Koichi: *See—*
Yasuda, Atsuhiro; and Kobayashi, Koichi, 3,675,496.

Kobayashi, Seihin; and Torii, Michihiro, to Fuji Denki Kagaku Kabushiki Kaisha. Frame structures for electronic circuits. 3,676,748, Cl. 317-101.0cm.

Kobayashi, Tetsuo, to Mittan Company Limited. Fire alarm system with fire zone locator using zener diode voltage monitoring. 3,676,877, Cl. 340-227.00r.

Kobayashi, Yozaburo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for attaching a front-wheel fork to a head pipe in a two-wheeled vehicle or the like. 3,675,944, Cl. 280-278.000.

Koch, John H., to Atkins & Merrill, Inc. Modular aircraft pedestal. 3,675,880, Cl. 244-83.00r.

Koehring-Waterous, Ltd.: *See—*
Denovan, John J.; and Kurelek, John, 3,675,691.

Kogelnik, Herwig Werner; and Shank, Charles Vernon, to Bell Telephone Laboratories, Incorporated. Reflective-type narrow bank filter. 3,675,990, Cl. 350-311.000.

Kohan, Melvin I.; Martin, Wayne H.; and Rosenbaum, Chester K., to Du Pont de Nemours, E. I., and Company. Thermoplastic blends of high-amine-end poly-amides and acid-containing olefin polymers. 3,676,400, Cl. 260-857.00l.

Kohler Co.: *See—*
Syverson, Charles D., 3,676,764.

Kohring, Walter. Mooring structure. 3,675,609, Cl. 114-230.000.

Kohring, Walter. Mooring structure in combination with a fender. 3,675,610, Cl. 114-230.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Muratani, Takuro; Ogawa, Akira; and Nosaka, Kunishi, 3,676,593.

Kolm, Henry H., to Massachusetts Institute of Technology. Process for magnetic separation. 3,676,337, Cl. 210-42.000.

Komada, Hitoshi: *See—*
Takemasa, Kazuo; and Komada, Hitoshi, 3,675,438.

Komori, Shigehiro; and Hattori, Hiroyuki, to Canon Kabushiki Kaisha. Photocopying apparatus provided with original inverting device. 3,675,999, Cl. 355-8.000.

Konig, Gustav. Structural assembly. 3,675,954, Cl. 287-20.92w.

Koninklijke Nederlandsche Gist-en Spiritusfabriek N.V.: *See—*
Weissenburger, Helmut Wilhelm Otto, 3,676,429.

Konoshima Chemical Co., Ltd.: *See—*
Taga, Koji; and Noguchi, Masahiko, 3,676,061.
Taga, Koji; and Noguchi, Masahiko, 3,676,062.

Kontranowski, Edward S., to Aerospace America, Inc. Vehicle wheeled driving mechanism. 3,675,730, Cl. 180-55.000.

Kopelman, Bernard: *See—*
Beare, Gene K.; Kopelman, Bernard; and Seeger, Donald E., 3,676,663.

Koppe, Robert G., to Exact Weight Scale Corporation. Interchangeable carton holder for chain conveyor. 3,675,759, Cl. 198-131.000.

Koppers Company, Inc.: *See—*
Blommers, Elizabeth, 3,676,284.
Wright, John, 3,675,750.

Kornfeld, Edmund Carl, to Lilly, Eli, and Company. (Indolylmethyl)malonate compound. 3,676,458, Cl. 260-326.14t.

Korodi, Miklos B.; and Runyan, Clarence R., to Holland Hitch Company. Impact fifth wheel. 3,675,946, Cl. 280-440.000.

Korpman, Ralf, to Johnson & Johnson. Pressure-sensitive adhesive tape. 3,676,202, Cl. 117-122.00p.

Koshman, Eduard Ivanovich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Koste, Bernard F: *See—*
Bremmer, James S.; and Koste, Bernard F, 3,675,904.

Koste, Bernard F., deceased: *See—*
Bremmer, James S.; Koste, Bernard F., deceased, 367,904.

Koste, Elsie E.: *See—*
Bremmer, James S.; and Koste, Bernard F, 3,675,904.

Koste, Elsie E., executrix: *See—*
Bremmer, James S.; Koste, Bernard F., deceased, 367,904.

Kotla, John J.: *See—*
Carlsen, Donald W.; Kotla, John J.; and Parker, Arden A., 3,676,646.

Kourtesis, John G.; and Marcoux, Leo, to Texas Instruments, Incorporated. Contact system for electrically conductive ceramic-like material. 3,676,211, Cl. 117-212.000.

Kouth, Herbert: *See—*
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, 3,675,371.

Kovacs, Mark A., to United Aircraft Corporation. Atomic fluorine laser. 3,676,797, Cl. 331-94.500.

Kovalev, Alexandr Ivanovich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Kowalewski, Alexander Joseph, to Du Pont de Nemours, E. I., and Company. Electrical discharge treatment of tetrafluoroethylene/hexafluoropropylene copolymer in acetone. 3,676,181, Cl. 117-47.00a.

Koziol, Konrad: *See—*
Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, 3,676,371.

Kozol, Eugene T.; and Wohl, Robert J., to International Business Machines Corporation. Deformographic target assembly with integral conductive member. 3,676,588, Cl. 178-7.50d.

Kramer, Bruce E.: *See—*
Page, George A.; Rathbun, Robert R.; and Kramer, Bruce E., 3,676,635.

Krasikov, Evsei Dmitrievich: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Krassig, Johannes: *See—*
Sabhofer, Franz; and Krassig, Johannes, 3,676,243.

Krauskopf, William B. Elastomeric interlock to prevent vertical disengagement of railway car couples. 3,675,787, Cl. 213-153.000.

Kravitz, Milton: *See—*
Kesilman, Sol; Kravitz, Milton; and Penn, Hyman B., 3,675,598.

Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz; deceased (Hornig, Anneliese, nee Munich; co-heiress), to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of carbon tetrachloride. 3,676,508, Cl. 260-664.000.

Kresge, Alfred N.: *See—*
Ellis, Alan F.; Kresge, Alfred N.; and Seekircher, Richard, 3,676,489.

Krichbaum, Donald W.: *See—*
Lambert, Kenneth W.; and Krichbaum, Donald W., 3,675,379.

Kristian Krog Sorensen: *See—*
Bartens, Carl Emil, 3,676,618.

Kritske, Victor J., to Mayline Company, Inc. Drafting table. 3,675,594, Cl. 108-2.000.

Krivis, Alan F., to Portage Research & Development Corporation. Breath test for marijuana smokers and apparatus therefor. 3,676,072, Cl. 23-232.00r.

Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., to Xerox Corporation. Image reversal in manifold imaging using an electrically conductive receiver sheet. 3,676,116, Cl. 96-1.300.

Kronmeyer, James Hughes: *See—*
Flanagan, James Loton; Kronmeyer, James Hughes; and Nelson, John Richard, 3,675,513.

Kubinski, Donald C.: *See—*
Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,676,259.

Kubo, Seitoku Kaisha: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.

Kubsch, Wilhelm, to Hartung, Kuhn & Co., Maschinenfabrik G.m.b.H. Collecting hood for coke-quenching cars. 3,675,400, Cl. 55-385.000.

Kuceski, Vincent P., to Hall, C. P., Company of Illinois, The. Ether amides in aqueous lubricants. 3,676,344, Cl. 252-49.300.

Kuceski, Vincent P., to Hall, C. P., Company of Illinois, The. Aqueous lubricant. 3,676,345, Cl. 252-49.300.

Kumahara, Tadashi: *See—*
Kinbara, Setsuro; and Kumahara, Tadashi, 3,676,783.

Kumpula, John W.: *See—*
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, 3,675,327.

Kuramoto, Yoshio; and Inagaki, Shotaro, to Minolta Camera Kabushiki Kaisha. Optical system for a single lens reflex camera. 3,675,558, Cl. 95-42.000.

Kuraray Co., Ltd.: *See—*
Makimoto, Tsutomu, 3,676,416.

Kurelek, John: *See—*
Denovan, John J.; and Kurelek, John, 3,675,691.

Kurihara, Shigeru: *See—*
Yokozato, Junichi; and Kurihara, Shigeru, 3,675,557.

Kuroe, Akio: *See—*
Kobayashi, Fukashi; Ono, Mitsuaki; and Kuroe, Akio, 3,676,612.

Kurth, Carl Ferdinand, to Bell Telephone Laboratories, Incorporated. Frequency division multiplex single-sideband modulation system. 3,676,598, Cl. 179-15.0fd.

Kushigian, Anthony. Clearance grinding machine. 3,675,372, Cl. 51-5.000.

Kverneland, Finn, to Globus Maskinfabrik A/S. Machine for distributing seed, fertilizer and other grain or powder masses. 3,675,856, Cl. 239-654.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Nakajima, Junichi; Araki, Kazumi; and Morinaga, Kenzo, 3,676,301.

L. & C. Steinmuller G.m.b.H.: *See—*
Seibold, Rudolf, 3,675,628.

La Force, Phil D.: *See—*
Scannell, Paul R.; La Force, Phil D.; and O'Connell, Wayne T., 3,675,425.

La Macchia, John Thomas, to Bell Telephone Laboratories, Incorporated. Large capacity digital memory. 3,675,983, Cl. 350-3.500.

La Marca, Thomas, Jr.: *See—*
Guarino, Michael J., Sr., 3,675,929.

La Rocca, James J.; and Bartolomeo, Blase J., to Continental Can Company, Inc. Method and fluidic control system for operating a can closing machine. 3,675,668, Cl. 137-1.000.

Labana, Santokh S., to Ford Motor Company. Thermoset resins with hydroxy acrylate, methyl methacrylate and blocked isocyanate. 3,676,405, Cl. 260-77.5cr.

Laboratories Albert Rolland: *See—*
Thuillier, Yvonne, 3,676,551.

Labuda, Edward Franklin: *See—*
Dalton, John Vincent; and Labuda, Edward Franklin, 3,676,727.

Lacey, Robert E.; and Mintz, Milton S., 1/2 to Southern Research Institute and 1/2 to United States of America, Interior. Process for effecting changes in solution concentrations. 3,676,335, Cl. 210-23.000.

Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, to Endo Laboratories, Inc. Long-acting narcotic antagonist formulations. 3,676,557, Cl. 424-260.000.

Lacroix, Philippe: *See—*
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, 3,676,390.

Lake, Donald; Perrin, Badger; and Nolan, Frederick J., to TRW Inc. Fastening device. 3,675,817, Cl. 221-95.000.

Lam, Hung-Kei H.: *See—*
Bell, Norman; and Lam, Hung-Kei H., 3,676,077.

LaMarca, Joseph. Keyboard teaching machine. 3,675,339, Cl. 35-5.000.

Lambert, Kenneth W.; and Krichbaum, Donald W., to Dunham-Bush, Inc. Weatherproof enclosure. 3,675,379, Cl. 52-79.000.

Lamping, Robert F., to Modern Engineering Company, Inc. High pressure regulator. 3,675,678, Cl. 137-505.220.

Lamson, Byron A.: *See—*
Grant, David C.; and Lamson, Byron A., 3,675,406.

Land, Edwin H.; and Erlichman, Irving, to Polaroid Corporation. Film storage chamber. 3,675,551, Cl. 95-11.00r.

Landel, Robert F.: *See—*
United States of America, National Aeronautics and Space Administration, 3,675,712.

Landen, William James; and Lundquist, Gunnar, to International Silver Company, The. Brush construction. 3,675,265, Cl. 15-193.000.

Landes, Hugh S.: *See—*
United States of America, National Aeronautics and Space Administration, 3,676,809.

Landler, Yvan; and Lebel, Pierre Henri. Graft copolymers and process of making same. 3,676,190, Cl. 117-76.

Lane, Bert: *See—*
McQuary, Kenneth L.; Karlin, George H.; and Lane, Bert, 3,675,301.

Lane, Donald W.; and Pemberton, Troy J., to Phillips Petroleum Company. Modified on-off control. 3,676,782, Cl. 328-1.000.

Lanoue, Thomas J.; and De Neef, John G., to Westinghouse Electric Corporation. Transformer lead insulator and method of making same. 3,676,579, Cl. 174-138.00r.

Lanphear, Jerry D.: *See—*
Schneider, Franklin R.; and Lanphear, Jerry D., 3,676,694.

Lantz, Joseph C.: *See—*

Domyan, Frank F.; Lantz, Joseph C.; and Sibley, Richard D., 3,675,650.

Lapera, Doninic J., to Parker-Hannifin Corporation. Fuel nozzle with modulating primary nozzle. 3,675,853, Cl. 239-464.000.

Larson, Carl B.; and Gimbel, William T. Apparatus for conveying, handling, loading, and unloading of palletized materials. 3,675,801, Cl. 214-310.000.

Larson, Jerry K.: *See—*
Goldman, Irving M.; and Larson, Jerry K., 3,676,428.

Larson, Kenneth R., to Snap-On-Tools Corporation. Portable testing and checking apparatus with adjustable mounts. 3,675,464, Cl. 73-1.00c.

Larson, Leland B.: *See—*
Clement, Clyde H., 3,675,830.

LaRue, James F., to Goodyear Tire & Rubber Company, The. Machine for splicing tire cord. 3,675,407, Cl. 57-22.000.

Laskowitz, Joseph F. Massage apparatus. 3,675,644, Cl. 128-58.000.

Laskowski, Edward L., to General Electric Company. Resistor circuit assembly for sequentially flashing photoflash lamps. 3,676,046, Cl. 431-95.000.

Laszlo, Nicolar, to Ets. Carpano & Pons. Safety bindings for skis. 3,675,937, Cl. 280-11.35t.

Lauer, James L. Apparatus for removing sulfur dioxide from stack gases. 3,676,318, Cl. 204-193.000.

Laupman, Robert Ronald, to N.V. Auco. A.C. control devices. 3,676,706, Cl. 307-252.00b.

Lawson, Jimmie B.: *See—*
Farmer, Robert F., III; and Lawson, Jimmie B., 3,675,716.

Lawson-Tancred, Henry: *See—*
Steed, Frank Streeton; and Lawson-Tancred, Henry, 3,675,799.

Lazzari, Jean-Pierre; and Melnick, Igor, to Commissariat a l'Engerie Atomique and Compagnie International pour l'Informatique. Integrated low-level magnetic decoder. 3,676,869, Cl. 340-174.0qa.

Le Brasse, Gordon J.; and Stolarski, Boniface, to Federal-Mogul Corporation. Pre-alloyed nickel-free silicon-free minimal-oxide low-alloy iron powder and method of making same. 3,676,103, Cl. 75-.5ba.

Le Goff, Loman H., to Acushnet Company. Protective piping for golf bags. 3,675,698, Cl. 150-1.50r.

Le Voy's, Inc.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,675,891.

Leach, Robert E.: *See—*
Marzocchi, Alfred; Benson, Gustav E.; and Leach, Robert E., 3,675,704.

Lebduska, Robert L.: *See—*
Meckel, Benjamin B.; and Lebduska, Robert L., 3,676,672.

Lebel, Pierre Henri: *See—*
Landler, Yvan; and Lebel, Pierre Henri, 3,676,190.

Leblond, Jean, to Uniroyal Englebert France S.A. Tire building drum having a magnetized surface. 3,676,262, Cl. 156-417.000.

Lee, Ernest O., Jr.: *See—*
Budrys, Ignas; and Lee, Ernest O., Jr., 3,676,603.

Lee, Fred S., to Honeywell Information Systems Inc. Magnetic bubble crossover circuit. 3,676,873, Cl. 340-174.0tf.

Lee, Jimmy G., to Schlumberger Technology Corporation. Well logging methods and apparatus. 3,676,842, Cl. 340-15.5bi.

Lee, Robert D., to United States of America, National Aeronautics and Space Administration. Metallic intrusion detector system. 3,676,772, Cl. 324-41.000.

Leeds and Micallef: *See—*
Micalief, Lewis A., 3,675,804.

Leffingwell, John C., to Reynolds, R. J., Tobacco Company. Preparation of a terepene alcohol. 3,676,504, Cl. 260-631.500.

Legorreta-Sanchez, Gildardo. Method and apparatus for classifying and segregating particles with electric and optical means. 3,675,768, Cl. 209-4.000.

Leguyt, Jacob: *See—*
Frohlich, Josef; and Leguyt, Jacob, 3,675,680.

Lehmacher, Hans: *See—*
Lehmacher, Michael; and Lehmacher, Hans, 3,676,270.

Lehmacher, Michael; and Lehmacher, Hans. Machine for processing of web stock, particularly of thermoplastic synthetic plastic material. 3,676,270, Cl. 156-553.000.

Lehman, Kenneth G., to Norco, Inc. Releasable panel fastener. 3,675,531, Cl. 85-70.000.

Lehrian, William R.: *See—*
Carlson, Edgar; and Lehrian, William R., 3,676,333.

Lekan, Henry N., to Formax, Inc. Paper interleaver device. 3,675,387, Cl. 53-157.000.

Lemelson, Jerome H. Irradiation method for production of fiber-reinforced polymeric composites. 3,676,249, Cl. 156-244.000.

Lemke, Donald L.; and Ostrander, Ronald D., to Murray Machinery, Inc. Apparatus for handling pneumatic web roll winding shafts. 3,675,866, Cl. 242-55.000.

Lemoine, Jacques: *See—*
Vidal, Jean; and Lemoine, Jacques, 3,675,423.
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, 3,675,426.

Lemon, John R.: *See—*
Martin, John P.; Beninger, Darrell J.; and Lemon, John R., 3,675,317.

Lems, Peter, to Signode Corporation. Load bagging apparatus. 3,675,388, Cl. 53-187.000.

Lenkeit, Carl Heinz; and Conklin, Cornelius Stephen, Jr., to United Aircraft Corporation. Jet engine force frame. 3,675,418, Cl. 60-39.310.

Lentz, Tommy L.; and Terry, Alton L., to Decatur Iron and Steel Company. Apparatus for selecting and controlling the operation of cell doors. 3,675,369, Cl. 49-20.000.

Leone, Nick A. Magnetic rotor assembly. 3,675,506, Cl. 74-572.000.

Leonova, Ljudmila Sergeevna: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Leopold, Henri; and Pomathios, Jacques, to Etablissements Tiflex. Complex film for obtaining silk screen stencils. 3,676,128, Cl. 96-36.400.

Lepetit S.p.A.: *See—*
Thiemann, Josef; Murthy, Yelahanka K. S.; and Coronelli, Carolina, 3,676,490.

Lepley, James W.: *See—*
Aikinson, James D.; Lepley, James W.; Nussbaum, Claire E.; and Stolzfus, John E., 3,675,796.

Lesky, Stephen: *See—*
Hight, Hanford Z.; and Lesky, Stephen, 3,676,254.

Leu, Francois J.; Tosin, Peter M.; and Werner, Ernst, to Omega Louis Brandt & Frere S.A. Time measuring system for swimming competitions. 3,676,696, Cl. 307-119.000.

Levi, Clifford A., to Alpha Industries, Inc., mesne. Method of producing semiconductor devices. 3,675,314, Cl. 29-528.000.

Levin, Ezra, to VioBin Corporation, mesne. Stable insulin material. 3,676,552, Cl. 424-110.000.

Levine, Seymour D., to Squibb, E. R., & Sons, Inc. Acenaphthyloxazole derivatives. 3,676,452, Cl. 260-307.00d.

Lewis, Alan E.; and Voight, Frederick W., Jr., to Eastman Kodak Company. Method for use in a continuous flow reaction for producing a monomer and or a protopolymer. 3,676,485, Cl. 260-475.00p.

Lewis, Bernard L.: *See—*
Pietsch, Roy; and Lewis, Bernard L., 3,675,989.

Lewis Engineering Company, The: *See—*
Blackwell, Dana J., 3,675,410.

Leydon, Arthur J.: *See—*
Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., 3,676,386.

Lezak, Jay R. Fingerprinting apparatus. 3,675,618, Cl. 118-31.500.

Libbey-Owens-Ford Company: *See—*
Hall, Harold R., 3,676,098.

Libby, Charles C.; and McDaniel, Raymond C., to Ohio State University, The. Method and apparatus for controlling frequency of piezoelectric transducers. 3,676,720, Cl. 310-8.100.

Libman, Max L.: *See—*
Rabinow, Jacob, 3,675,932.

Lickliter, Robert Paul; and Reeves, John F., to Flangeklamp Corporation. Wall structure having a window support assembly. 3,675,382, Cl. 52-214.000.

Lickliter, Robert Paul; Abbott, Earl; and Reeves, John F., to Flangeklamp Corporation. Locking connection for supporting grid systems. 3,675,957, Cl. 287-189.36a.

Liggett & Myers Incorporated: *See—*
Hall, Floyd V., 3,675,761.

Lightolier Incorporated: *See—*
Donato, Anthony C., 3,676,830.

Lilly, Eli, and Company: *See—*
Galloway, Reginald B.; and Shumard, Raymond F., 3,676,547.
Kornfeld, Edmund Carl, 3,676,458.
Massey, Eddie H., 3,676,434.
Neuss, Norbert, 3,676,438.
Ose, Earl E., 3,676,548.
Pitt, Colin G., 3,676,502.

Limiero, Albert David: *See—*
Goldthorp, David Clayton; Limiero, Albert David; and Smith, John Paul, 3,676,608.

Linder, Kenneth C., to Riley Company, The Company, The. Variable monitoring system. 3,676,878, Cl. 340-408.000.

Lindlof, James A., to Minnesota Mining and Manufacturing Company. Stable elastomeric polymer-oil combinations. 3,676,387, Cl. 260-28.50b.

Lindsay Specialty Products Limited: *See—*
Pennypacker, Frank Chester, 3,676,744.

Lindsey, Alan Sidney; and Hunt, Sydney Edwin, to National Research Development Corporation. Polybenzoxazole amides, esters and thioesters, polybenzthiazole amides, esters and thioesters and preparation thereof. 3,676,399, Cl. 260-47.0co.

Lindsey, Richard V.: *See—*
Drinkard, William C., Jr.; and Lindsey, Richard V., 3,676,475.

Linenberg, Amos, to Hydronautics-Israel, Ltd. Sampling valve and system for the detection of predetermined compounds in air. 3,675,466, Cl. 73-23.100.

Linning, David Lees; and Cowking, Charles Brian, to United Kingdom Atomic Energy Authority. Nuclear reactor with secondary shut down control rod. 3,676,296, Cl. 176-35.000.

Linstromberg, William J., to Whirlpool Corporation. Water fill shut-off control for a domestic icemaker. 3,675,437, Cl. 62-137.000.

Lippert, Wolfgang: *See—*

Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, 3,676,371.

LIPS N.V.: *See—*
Oosterveld, Marinus Willem Cornelis, 3,675,424.

Little, Arthur D., Inc.: *See—*
Pars, Harry G.; and Granchelli, Felix E., 3,676,462.

Litton Medical Products, Inc.: *See—*
Vandervelden, Cornelius Keith, 3,676,683.

Litvak Meat Company Inc.: *See—*
Sheldon, Richard, 3,676,153.

Livingston, William L., to Factory Mutual Research Corporation. Snap-off tab nozzle. 3,675,854, Cl. 239-490.000.

Lobb, Daniel R.: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.

Lock, Roger David, to Bell Canada-Northern Electric Research Limited. Propagation of magnetic bubble domains. 3,676,872, Cl. 340-174.0tf.

Locke, John Michael: *See—*
Duck, Edward William; Ridgewell, Brian John; and Locke, John Michael, 3,676,409.

Lockett, George Edward: *See—*
Rennie, Compton Alexander; Lockett, George Edward; and Hosegood, Samuel Brittan, 3,676,297.

Lockwood, George C., to National Cash Register Company, The. Non-volatile flip-flop memory cell. 3,676,717, Cl. 307-304.000.

Loeb, Julien M., to Compagnie Generale de Ceophysique. Method and apparatus for measuring variations in a quantity with respect to a known reference value. 3,675,485, Cl. 73-382.000.

Loepfe, Erich, to Aktiengesellschaft Loepfe. Method and apparatus for detecting a relative movement between two bodies being in frictional contact with each other. 3,676,769, Cl. 324-32.000.

Lofton, John T.; Harper, Robert J., Jr.; and Blanchard, Eugene J., to United States of America, Agriculture. Permanent sizing of yarns and fibers with durable polymers and copolymers for the production of fabrics with improved properties for particular end uses. 3,676,207, Cl. 117-143.00a.

Loftus, Joseph F.: *See—*
Cavagnero, Erman V.; and Loftus, Joseph F., 3,675,460.

Logan, Robert P., to Eagle-Picker Industries, Inc. Sign support material. 3,676,281, Cl. 161-85.000.

Long, George W.: *See—*
Hobbs, James W.; and Long, George W., 3,676,304.

Lord, Peter Herent. Rectal cone for use in postoperative treatment. 3,675,642, Cl. 128-1.000.

L'Oreal: *See—*
Guillet, Philippe Robert, 3,675,491.
Kalopissis, Gregoire; and Bugaut, Andree, 3,676,049.
Morane, Bruno; Paoletti, Charles; and Terrasse, Gilles, 3,675,821.
Morane, Bruno P., 3,675,825.

Lorenz, Walter: *See—*
Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, 3,676,555.

Lorren, Robert E. Pitcher with a flexible inner container forming the spout. 3,675,826, Cl. 222-183.000.

Los, Lenore J., to Grace, W. R., & Co. Isocyanurate-containing polythiols. 3,676,440, Cl. 260-248.0ns.

Losert, Ewald: *See—*
Rembold, Heinz; and Losert, Ewald, 3,676,200.

Loughridge, Frederick A.; Matheson, Wilfrid G.; and Passmore, Edmund M., to Sylvania Electric Products, Inc. Seal arrangements for lamps. 3,676,730, Cl. 313-318.000.

Loughridge, Frederick Ardel: *See—*
Anderson, John Wallace; and Loughridge, Frederick Ardel, 3,676,043.

Louis, Anthony, to Aquaria, Inc. Lamp housing structure. 3,676,665, Cl. 240-41.500.

Loup, Jean-Pierre Olivier; Gutknecht, Jacques Emile; and Anthony, Anne-Marie, nee Barbier, to Agence Nationale de Valorisation de la Recherche. Method for measurement of partial pressures of a gaseous substance using a metallic compound of the gaseous substance. 3,676,771, Cl. 324-33.000.

Louthan, Rector P., to Phillips Petroleum Company. Plasticized sulfur compositions. 3,676,166, Cl. 106-241.000.

Low, George M., Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Clauss, Robert; and Quinn, Rex B. Maser for frequencies in the 7–20 GHz range. 3,676,787. Cl. 330-004.000.

Lubrizol Corporation, The: *See—*
Snee, Charles Thomas, 3,676,224.

Lucas, JamesM., to Aerojet-General Corporation. Preparation of uniform and storable fuel mixtures. 3,676,232, Cl. 149-6.000.

Luck, Dieter G., to Orenstein and Koppel Limited. Ripping tool supported scoop for excavator. 3,675,349, Cl. 37-117.500.

Luckey, Manley J. Alveolar breath volumetric analysis for alcohol. 3,676,073, Cl. 23-232.00r.

Ludwig, Lawrence P.; and Strom, Thomas N., to United States of America, National Aeronautics and Space Administration. Spiral groove seal. 3,675,935, Cl. 277-27.000.

Luft, Robert G., to International Harvester Company. Elevating compartment. 3,675,966, Cl. 296-28.00c.

Lummus Company, The: *See—*
Dorn, Rolf K.; and Williams, Theodore S., 3,676,519.

Lund, Alvin R.; and Kaufman, Jack, to Markstone Manufacturing Company. Recessed lighting fixture housing. 3,675,807, Cl. 220-3.940.

Lundquist, Gunnar: *See—*
Landen, William James; and Lundquist, Gunnar, 3,675,265.

Ly, Manuel G.: *See—*
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., 3,676,480.

Lyon, John K., to Price-Pfister Brass Mfg. Co. Self-sealing mixture valve unit for single-handled sink or lavatory fixture. 3,675,682, Cl. 137-625.170.

Lyon, William O.: *See—*
Hunts, Barney D.; and Lyon, William O., 3,675,624.

M. I. Sales Co., Inc.: *See—*
Halpern, Arthur, 3,675,364.

Macartney, Carl H.; and Bawduniak, Joseph A., to Merck & Co., Inc. Apparatus for detecting aerosol leakage. 3,675,469, Cl. 73-40.700.

Machida, Tetsuo, to Sony Corporation. Push button assembly. 3,676,810, Cl. 335-159.000.

Mackey, E. Scudder; and Miceli, Vincent J., to GAF Corporation. Antistatic film properties using methyl vinyl ether/maleic acid interpolymer. 3,676,209, Cl. 117-161.0uc.

MacMillan, Charles W., to Applied Power Industries, Inc. Wheel balancing apparatus. 3,675,495, Cl. 73-466.000.

Maeda, Riichi, to Nissan Motor Company Limited. Vapour power plant. 3,675,416, Cl. 60-36.000.

Magee, Harry H. Cattle identification apparatus. 3,675,357, Cl. 40-300.000.

Magidson, William H.: *See—*
Protzman, Thomas F.; and Magidson, William H., 3,676,127.

Maginness, Maxwell Glynn: *See—*
Kay, Leslie; Maginness, Maxwell Glynn; and Cook, Graham Bramwell, 3,675,472.

Mahaffey, Donald M.: *See—*
Dawson, Ralph E.; and Mahaffey, Donald M., 3,676,425.

Mahler, Ernst, to Didier-Werke A.G. Magnesite refractory materials. 3,676,162, Cl. 106-58.000.

Maillardet, Frederick James: *See—*
Ingram, David John; and Maillardet, Frederick James, 3,675,794.

Maki, John O. Drip dryer for drip dry clothing. 3,675,338, Cl. 34-239.000.

Makimoto, Tsutomu, to Kuraray Co., Ltd. Isoprene polymerization process and catalyst system therefor. 3,676,416, Cl. 260-94.300.

Malandro, George H.; and White, Peter, to Javora, Henry J. Multi digit verification apparatus and method. 3,676,849, Cl. 340-149.00r.

Malifaud, Pierre. Optical projector device. 3,676,667, Cl. 240-41.35r.

Mallander, Filip Birger Emanuel. Collapsible storage unit. 3,675,981, Cl. 312-257.000.

Mallatt, Russell C.: *See—*
Grutsch, James F.; and Mallatt, Russell C., 3,675,779.

Mallinckrodt Chemical Works, mesne: *See—*
Tejera, Luis H., 3,675,492.

Mallory, P. R., & Co., Inc.: *See—*
Wiser, Joseph E.; and Gerhardt, Peter H., 3,676,725.

Maltby, Frank Vincent, to Bata Shoe Company, Inc. Manufacture of footwear. 3,676,542, Cl. 264-244.000.

Mangold, Edward J., to Skagit Corporation. Self leveling spreader frame. 3,675,960, Cl. 294-81.0sf.

Manly, Ron. Automatic editing system and method. 3,676,856, Cl. 340-172.500.

Mannesmann Aktiengesellschaft: *See—*
Frohlich, Josef; and Leguyt, Jacob, 3,675,680.

Mantell, Gerald J.; and Rondestvedt, Christian S., Jr., to Du Pont de Nemours, E. I., and Company. Tertiary aldehyde compounds. 3,676,500, Cl. 260-602.

Manufacture 'Quenot Mabo': *See—*
Quenot, Andre, 3,675,334.

Manus, Eugene A.: *See—*
United States of America, National Aeronautics and Space Administration, 3,676,809.

Marathon Oil Company: *See—*
Merrill, La Vaun S., Jr.; and Schilson, Robert E., 3,676,517.

Marcote, Rolando V.: *See—*
Chemtob, Elie M.; White, William R.; and Marcote, Rolando V., 3,675,773.

Marcoux, Leo: *See—*
Kourtesis, John G.; and Marcoux, Leo, 3,676,211.

Margot, Alfred: *See—*
Traber, Walter; Margot, Alfred; and Gailay, Jean-Jacques, 3,676,561.

Marino, Michelangelo: *See—*
Garilli, Francesco; and Marino, Michelangelo, 3,675,489.

Mark, Alfred J., to Chrysler Corporation. Apparatus and method for preparing piped covering materials. 3,675,289, Cl. 29-91.000.

Markstone Manufacturing Company: *See—*
Lund, Alvin R.; and Kaufman, Jack, 3,675,807.

Marosy, Andre. Coupling. 3,675,499, Cl. 24-201.00a.

Marr, Fritz: *See—*
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, 3,675,371.

Marsan, Mario S.: *See—*
Baker, Joseph S.; Marsan, Mario S.; and Duncan, Robert C., 3,675,654.

Marsch, Karl. Machine and method for making pulley grooves or the like. 3,675,453, Cl. 72-58.000.

Marsh, Ronald W.: *See—*
Mundinger, William D.; and Marsh, Ronald W., 3,675,975.

Marshall, Robert A.; and Barach, Howard J. Filter device. 3,675,780, Cl. 210-446.000.

Marshall, Walter R., to Union Carbide Corporation. Mixing of fluid materials. 3,675,902, Cl. 259-7.000.

Martelee, Ghislain Antoine Jean-Marie, to Cockerill-Ougree-Prodicence et Esperance-Longdoz. Press assembly for compacting and binding wire coils. 3,675,568, Cl. 100-7.000.

Martin, Calvin C. Positionable clothesline support. 3,675,785, Cl. 211-119.100.

Martin, Donald L.; and Benz, Mark G., to General Electric Company. Superconductors containing flux traps. 3,676,577, Cl. 174-119.00r.

Martin, Eugene Earl: *See*—
Christie, Christopher E.; and Martin, Eugene Earl, 3,676,028.

Martin, John P.; Beninger, Darrell J.; and Lemon, John R., to Welwyn Canada Limited. Method for spiralling electrical resistors. 3,675,317, Cl. 29-620.000.

Martin, Wayne H.: *See*—
Kohan, Melvin I.; Martin, Wayne H.; and Rosenbaum, Chester K., 3,676,400.

Martin-Marietta Corporation: *See*—
Friedell, Morley V., 3,675,894.
McGrew, Jay L.; and Gille, John P., 3,675,809.

Marton, John P., to Welwyn Canada Limited. Process for the selective formation of coatings by electroless deposition. 3,676,213, Cl. 117-212.000.

Marze, Xavier, to Rhone-Poulenc S.A. Cation exchange membranes. 3,676,326, Cl. 204-296.

Marzocchi, Alfred; Benson, Gustav E.; and Leach, Robert E., to Owens-Corning Fiberglas Corporation. Tire constructions. 3,675,704, Cl. 152-361.000.

Maschinenfabrik Andritz Actiengesellschaft: *See*—
Reif, Kurt, 3,676,011.

Maserjian, Joseph; and Gatewood, John R., to United States of America, National Aeronautics and Space Administration. Thin-film temperature sensor and method of making same. 3,676,754, Cl. 317-230.000.

Mashimo, Teruo: *See*—
Shibayama, Daigoro; and Mashimo, Teruo, 3,676,074.

Mason, Ronald F., to Shell Oil Company. Alpha-olefin production. 3,676,523, Cl. 260-683.15d.

Mason, Warren Perry, to Bell Telephone Laboratories, Incorporated. Monolithic crystal filter with auxiliary filter shorting tabs. 3,676,805, Cl. 333-72.000.

Massachusetts Institute of Technology: *See*—
Kolm, Henry H., 3,676,337.
Pratt, George W., Jr., 3,676,795.

Massey, Eddie H., to Lilly, Eli, and Company. Cephalosporin salts. 3,676,434, Cl. 260-243.00c.

Massey-Ferguson Industries Limited: *See*—
Girodat, Joseph C. F., 3,675,660.

Massey-Ferguson Services NV: *See*—
Thomas, Alfred William, 3,675,497.

Masuda, Noboru; and Koba-ashi, Tunekazu, to Denki Onkyo Co., Ltd. Magnetic switching apparatus. 3,676,828, Cl. 338-32.

Matheson, Wilfrid G.: *See*—
Loughridge, Frederick A.; Matheson, Wilfrid G.; and Passmore, Edmund M., 3,676,730.

Mathews, Joseph W. Moving coil direct current reciprocating motor. 3,676,758, Cl. 318-128.000.

Matousek, Stephen, to Whitey Research Tool Co. Trunion mounting for encapsulated ball valve. 3,675,895, Cl. 251-315.000.

Matsuda, Mutsuhide: *See*—
Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, 3,675,547.

Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, to Takeda Chemical Industries, Ltd. Low-temperature curable blocked isocyanate compositions containing a stannoxane catalyst. 3,676,402, Cl. 260-75.0nc.

Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, to Nippon Steel Corporation. Process for producing single oriented silicon steel plates low in the iron loss. 3,676,227, Cl. 148-111.000.

Matsumoto, Teruo, to Epoch Company, Ltd. Educational device. 3,675,341, Cl. 35-9.00b.

Matsumoto, Zenji: *See*—
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.

Matsushita Denko Kabushiki Kaisha: *See*—
Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, 3,675,324.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kobayashi, Fukashi; Ono, Mitsuaki; and Kuroe, Akio, 3,676,612.
Sasabe, Kaoru, 3,676,862.
Taki, Hiromitsu; Hayakawa, Shigeru; and Nagase, Kaneomi, 3,676,351.

Matsushita Electric Industrial Company: *See*—
Uno, Yoshihiro, 3,676,586.

Mattel, Inc.: *See*—
de Gelder, Jacob; and Phillips, Gary E., 3,675,362.
Mills, Michael Colin, 3,675,363.
Ryan, John W.; Tomkinson, John G.; and Wieman, Paul R., 3,675,925.
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., 3,675,361.
Schlossar, Edmund, 3,675,931.
Summerfield, William F., 3,675,930.

Matulis, Albert J., to United States of America, Army. Distortion-free mirror attached to a metallic holder. 3,676,274, Cl. 161-4.000.

Maure, Douglas Raymond; and Broome, Barry Glenn, to Optical Memory Systems, Inc. Optical memory apparatus. 3,676,864, Cl. 340-173.0lm.

Maurer, David Paul, to Union Carbide Corporation. Detachable container refrigeration system. 3,675,439, Cl. 62-223.000.

Maus, Fritz: *See*—
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.

Mauthe, Gerhard, to Aktiengesellschaft Brown, Boveri & Cie. Gas blast power circuit breaker for high operating currents. 3,676,624, Cl. 200-148.00b.

Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, to Centre Europeen de Recherches Mauvernay C.E.R.M. 3-Alkoxy- or-3-aryloxy-2-(diaryl-hydroxy)-methyl-propylamines. 3,676,496, Cl. 260-570.00r.

Mayer, George L., Jr.; and Dobbins, David L., to Coded Signatures, Inc. Data encoding and decoding apparatus and method. 3,676,000, Cl. 355-52.000.

Mayer, Kurt, to Montanwerke Walter GmbH. Adjustable tool holder for releasable milling cutter bits for use in replaceable-bit milling cutter head-type milling machine. 3,675,290, Cl. 29-96.000.

Mayline Company, Inc.: *See*—
Kritske, Victor J., 3,675,594.

Mayo, Kenneth E.; and Parker, Eugene K., to Sanders Nuclear Corporation. Self-compensating thermal insulation garments. 3,675,244, Cl. 2-2.10r.

Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, to Agfa-Gevaert Aktiengesellschaft. On-off motor control push button switch for photographic apparatus. 3,676,759, Cl. 318-446.000.

Mazza, Joseph Peter. Removal of titanium from monazite ores. 3,676,081, Cl. 23-327.000.

Mc Gibbon, Graeme: *See*—
Sharples, Allan; Rostron, Arthur John; and Mc Gibbon, Graeme, 3,676,688.

Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, to Alcan Research and Development Limited. Recovery of metal from dross. 3,676,105, Cl. 75-68.00r.

Mc Millin, John V.; and Miller, D. Larry, to Westinghouse Learning Corporation. Reflected light document reading head. 3,676,690, Cl. 250-219.00d.

McBride, Richard T., to Du Pont de Nemours, E. I., and Company. Laminar structures of polyimide and fluorocarbon polymers. 3,676,566, Cl. 174-36.000.

McClelland, Etheride R.: *See*—
Meissner, Konrad E.; and McClelland, Etheride R., 3,675,695.

McCombs, Frank P.: *See*—
Flautt, Martin C.; Moran, Leland G.; and McCombs, Frank P., 3,676,287.

McCullough, Stuart, to Textron Inc. Two position tool holder. 3,675,519, Cl. 82-36.00a.

McCurrich, Laurence Henry: *See*—
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, 3,675,474.

McDaniel, George H., to Bendix Corporation, The. Rapid retract for thread cutting. 3,676,651, Cl. 235-151.110.

McDaniel, George H., to Bendix Corporation, The. Feedrate control system. 3,676,760, Cl. 318-571.000.

McDaniel, Raymond C.: *See*—
Libby, Charles C.; and McDaniel, Raymond C., 3,676,720.

McDonnell Douglas Corporation: *See*—
Dawson, James A., 3,675,949.

McGarrity, William F., to National Steel Corporation. Low carbon high yield strength alloy steel. 3,676,108, Cl. 75-123.00b.

McGlothlin, Bruce B.: *See*—
Goins, William C., Jr.; and McGlothlin, Bruce B., 3,675,717.

McGraw-Edison Company: *See*—
Happe, Reynold, 3,676,627.

McGrew, Jay L.; and Gille, John P., to Martin-Marietta Corporation. Capillary insulation. 3,675,809, Cl. 220-9.0lg.

McGroarty, Bryan M., 1/2% to Green, Wesley R. Method for waterproofing structures. 3,676,198, Cl. 117-105.500.

McGrogan, Ellwood Patrick, Jr., to RCA Corporation. Comparator circuit. 3,676,702, Cl. 307-235.000.

McGusty, Elizabeth R.; Sutton, Blaine M.; and Walz, Donald T., to Smith, Kline & French Laboratories, Inc. Anti-arthritic compositions comprising phosphine or phosphite gold halide complexes and methods of producing anti-arthritic activity. 3,676,554, Cl. 424-198.000.

McHugh, John; and Fowler, Gerald. Vehicle body heating and ventilating. 3,675,566, Cl. 98-2.070.

McInnis, George L. Flag storage and display device. 3,675,616, Cl. 116-173.000.

McKee, Horace L., to Mobil Oil Corporation. Process and system for control of fluids in water disposal surge tanks. 3,675,771, Cl. 210-83.000.

McKelvey, Ralph E., to Timken Company, The. Roller bearings. 3,675,978, Cl. 308-214.000.

McKendrick, Lorne J. Hoist and balancing apparatus. 3,675,899, Cl. 254-168.000.

McKinney, Paul W., to Fawcett Printing Corporation, The. Apparatus for producing trimmed printing face plates. 3,676,040, Cl. 425-470.000.

McKinnon, Benjamin I., to Equipment Sales Company, Inc. Hose holder and coupling inserter machine. 3,675,303, Cl. 29-237.000.

McLaughlin, Alexander; and Rose, James S., to Upjohn Company, The. Low friability polyisocyanurate foams. 3,676,380, Cl. 260-2.50aw.

McLeod, Garth M.; Copeland, Clinton R.; and Rieger, Gilbert N., to Westinghouse Electric Corporation. Method for providing mounting brackets on a cathode ray tube integral with the implosion protection system of the cathode ray tube. 3,675,287, Cl. 29-25.130.

McLeod, Richard K., to Monsanto Company. Process for alkylation of aromatic compounds. 3,676,515, Cl. 260-671.000.

McMahon, Donald H., to Sperry Rand Corporation. Cooling system for lasing media. 3,676,798, Cl. 331-94.500.

McNeil Corporation: *See*—
Boylan, Joseph S., 3,675,849.

McPherson, Taylor L. Throat swab holder. 3,675,652, Cl. 128-269.000.

McQuary, Kenneth L.; Karlin, George H.; and Lane, Bert, said McQuary assor to said Karlin and said Lane. Apparatus for assembly of valves and insertion into inflatable articles. 3,675,301, Cl. 29-208.00b.

Meade, Reginald E., to Pillsbury Company, The. Dust collecting process. 3,675,393, Cl. 55-96.000.

Mears, James W., to Grinnell Corporation. Adjustable drop nipple for pendent sprinkler. 3,675,952, Cl. 285-302.000.

Meckel, Benjamin B.; and Lebduska, Robert L. Large diameter ion beam apparatus with an apertured plate electrode to maintain uniform flux density across the beam. 3,676,672, Cl. 250-41.9se.

Meditron, Inc.: *See*—
Fennell, John Richard; and Harvey, Robert J., 3,676,149.

Medlin, Roger E.: *See*—
Adams, Rodney V.; and Medlin, Roger E., 3,676,875.

Medvecky, Bartholomew P.; Oberai, Avtar S.; and Platt, Alan, to International Business Machines Corporation. Method for producing high performance semiconductor device. 3,676,231, Cl. 148-188.000.

Medvetskaya, Galina Arkadievna: *See*—
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Meidert, Helmut: *See*—
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.

Meier, Otto: *See*—
Scheidweiler, Andreas; and Meier, Otto, 3,676,680.

Meinhardt, James R., to Seng Company, The. Chair control assembly. 3,675,887, Cl. 248-378.000.

Meissner, Konrad E.; and McClelland, Etheride R., to Filper Corporation. Drupe pitter. 3,675,695, Cl. 146-28.00a.

Mello, Frank A. Automatic vehicle washing apparatus with brush for cleaning the vehicle sides. 3,675,262, Cl. 15-4.000.

Mellow, Dale F.: *See*—
Dehm, Henry C.; and Mellow, Dale F., 3,676,533.

Melnick, Igor: *See*—
Lazzari, Jean-Pierre; and Melnick, Igor, 3,676,869.

Melsek, Norbert J., to Signode Corporation. Palletized load. 3,675,765, Cl. 206-46.0fn.

Melvin, William J., to Collins Radio Company. Digitalized filter. 3,676,654, Cl. 235-152.000.

Menelly, Richard A., to Sylvania Electric Products, Inc. Arc Discharge lamp having a thin continuous film of indium oxide on the inner surface thereof. 3,676,729, Cl. 313-109.000.

Mercier, Jacques H.; Copine, Fernand; and Corbellini, Carlo, said Copine and said Corbellini assors. to Olaer Patent Company. Pressure vessel. 3,675,684, Cl. 138-30.000.

Mercier, Jacques H. Valve including resilient seat washer with abutting rigid annular washer. 3,675,896, Cl. 251-321.000.

Merck & Co., Inc.: *See*—
Hinkley, David F.; and Ellsworth, Robert L., 3,676,482.
Macartney, Carl H.; and Bawduniak, Joseph A., 3,675,469.
Pines, Seemon H.; and Sletzinger, Meyer, 3,676,453.
Sarett, Lewis H.; and Ruyle, William V., 3,676,451.
Shen, Tsung-Ying; and Boswell, Kay H., 3,676,422.
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., 3,676,480.

Merfeld, Michael J.; and Truesdell, Merlyn R., to Century Engineering Corporation. High pressure washer with detergent on-off nozzle. 3,675,851, Cl. 239-318.000.

Merkenich, Karl: *See*—
Grimm, Dieter; Kandler, Joachim; Merkenich, Karl; and Pirig, Wolf-Dieter, 3,676,352.

Merkenschlager, Hans-Hermann, to Siemens Aktiengesellschaft. Process for the production of a circuit board. 3,675,318, Cl. 29-624.000.

Merrill, La Vaun S., Jr.; and Schilson, Robert E., to Marathon Oil Company. Process for the production of synthesis gas, cracked hydrocarbon and calcined coke. 3,676,517, Cl. 260-679.00r.

Merrin, Seymour, to Innotech Corporation. Insulated gate field effect device having glass gate insulator. 3,676,756, Cl. 317-235.000.

Mersfelder, Philip G. Compression device. 3,675,570, Cl. 100-90.000.

Metalem S.A.: *See*—
Feller, Gilbert, 3,675,295.

Metallic Building Company: *See*—
Chan, Charles S., 3,675,385.

Metreaud, Claude G., to International Business Machines Corporation. Semiconductor processing apparatus. 3,675,563, Cl. 95-89.00r.

Meyer, Byron W.; and Wright, William F., to Pillsbury Company, The. Extrusion control apparatus. 3,676,032, Cl. 425-140.000.

Meyer, Donald R.: *See*—
Arel, Robert W.; and Meyer, Donald R., 3,675,321.

Meyer, Harold E.: *See*—
White, Kenneth N.; and Meyer, Harold E., 3,676,272.

Meyer, James A.: *See*—
Rejsa, Jack J.; and Meyer, James A., 3,675,567.

Meyer, John Evert, to RCA Corporation. Logic circuits employing switches such as field-effect devices. 3,676,705, Cl. 307-251.000.

Meyer, Louis C. Fluid-powered applicator for medicaments. 3,675,651, Cl. 128-215.000.

Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., to American Hoechst Corporation. Laxatives comprising substituted bis (2-hydroxy-4-methyl-5-methylthiophenyl)methanes. 3,676,559, Cl. 424-275.000.

Meyers, Walter A., Sr., to Sports Equipment, Inc. Basketball training device. 3,675,921, Cl. 273-1.50a.

Miale, Joseph N., to Mobil Oil Corporation. Manganese silicate-containing minerals in the form of nodules and their use in hydrocarbon conversion. 3,676,369, Cl. 252-454.000.

Micalief, Lewis A., to Leeds and Micallef. Safety closure assembly. 3,675,804, Cl. 215-9.000.

Miceli, Vincent J.: *See*—
Mackey, E. Scudder; and Miceli, Vincent J., 3,676,209.

Michaelis, Paul Charles, to Bell Telephone Laboratories, Incorporated. Micromanipulator for multilevel assembly. 3,675,298, Cl. 29-203.00v.

Michaelis, Werner. Photographic developing apparatus. 3,675,564, Cl. 95-90.000.

Michel Lumber Company: *See*—
Jones, Allen J., 3,675,600.

Michelsen, Arve: *See*—
Bailey, Robert A.; and Michelsen, Arve, 3,675,575.

Michelson, Gunnar P. Razor edge safety guard apparatus. 3,675,325, Cl. 30-90.000.

Middleton, Henry Edward: *See*—
Palfreyman, Jack; and Middleton, Henry Edward, 3,675,294.

Miller, Cole R.: *See*—
O'Brien, Dennis M.; and Miller, Cole R., 3,676,336.

Miller, D. Larry: *See*—
Mc Millin, John V.; and Miller, D. Larry, 3,676,690.

Miller, Howard B.; and Sieet, George E., to United States of America, National Aeronautics and Space Administration. Spherical measurement device. 3,675,332, Cl. 33-1.0sa.

Miller, Jack V. Self-erecting tent. 3,675,667, Cl. 135-1.00r.

Miller, Larry R., to Hughes Aircraft Company. Vector half-angle computer. 3,676,660, Cl. 235-186.000.

Miller, Lee A.; and Zellmer, Richard C. Advertising sign for revolving drum. 3,675,353, Cl. 40-51.000.

Miller, Martin P., to General Automotive Specialty Company, Inc. Switch having spider-shaped contact carrier. 3,676,617, Cl. 200-44.000.

Miller, Richard C.: *See*—
Roberts, Melvin L.; Johnson, Carl E.; and Miller, Richard C., 3,676,356.

Miller, Timothy A.; and Hanselman, Larry R., to Ralston Purina Company. Animal litter. 3,675,625, Cl. 119-1.000.

Millis, Hugh L., Jr.; and Hoskinson, Eugene A., to Intertek Controls, Inc. Electronic linear measuring device. 3,676,652, Cl. 235-151.320.

Mills, K. Louis, Jr.: *See*—
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.

Mills, King L., to Phillips Petroleum Company. Composite carbon electrode structure having improved electrical conductivity. 3,676,324, Cl. 204-284.000.

Mills, Michael Colin, to Mattel, Inc. Foldable toys. 3,675,363, Cl. 46-15.000.

Min, Sherman L., to United States of America, Navy. Pressure actuated safety and arming device. 3,675,579, Cl. 102-70.200.

Mine Safety Appliances Company: *See*—
Wise, Layton A., 3,675,296.

Minnesota Mining and Manufacturing Company: *See*—
Jensen, Robert A.; and Johnson, Orville M., 3,676,266.
Johansson, Ronald C.; and Weeklund, Wayne Donald, 3,676,574.
Lindlof, James A., 3,676,387.
Truskolaski, Bernard S., 3,676,277.

Minolta Camera Kabushiki Kaisha: *See*—
Kuramoto, Yoshio; and Inagaki, Shotaro, 3,675,558.
Mori, Masao, 3,675,555.

Mintz, Milton S.: *See*—
Lacey, Robert E.; and Mintz, Milton S., 3,676,335.

Mise, Noritoshi: *See*—
Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, 3,676,402.

Misevich, Kenneth W., to Remington Arms Company, Inc. Sheet target with attachable stabilizing wings. 3,675,926, Cl. 273-105.400.

Mishler, Ralph Ephraim, to Globe-Union Inc. Production of resistive coatings. 3,676,212, Cl. 117-212.000.

Mitchell, Chauncey L., III, to Electronic Assistance Corporation. Method and apparatus for separating particulate materials. 3,675,859, Cl. 241-20.000.

Mitchell, Edward B., to TRW Inc., mesne. Pushbutton switch with liquid drainage facilitating cage body and diaphragm sealing and actuating means. 3,676,626, Cl. 200-159.00r.

Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, to Tokyo Shibaura Electric Co., Ltd. Chromium base alloys having excellent corrosion resistance and workability. 3,676,110, Cl. 75-134.000.

Mitrofanoff, Nicholas S.: *See*—
Abernathy, Roger E.; and Mitrofanoff, Nicholas S., 3,676,852.

Mitsubishi Acetate Company Limited: *See*—
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Takezawa, Isoe; Muto, Masataro; and Hori, Koichi, 3,675,606.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Tashiro, Kijuro; and Yokoyama, Masuzo, 3,676,418.

Mitsubishi Rayon Company Limited: *See*—
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.

Mittan Company Limited: *See*—
Kobayashi, Tetsuo, 3,676,877.

Miyachi, Kiyoichi; Hashino, Shinsuke; and Hongu, Tomokazu, to Hiroshima Kasei, Ltd. Sandal. 3,675,346, Cl. 36-11.500.

Miyake, Akihisa: *See*—
Takahashi, Kuniyuki; Hata, Go; and Miyake, Akihisa, 3,676,470.

Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, to Mitsui Toatsu Chemicals, Incorporated. Method of modifying fibrous materials. 3,676,053, Cl. 8-116.000.

Mizuki, Eiichi; Oishi, Yasushi; and Sawahara, Masao, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive element containing magenta coupler and alkyl phosphate solvent. 3,676,137, Cl. 96-56.500.

Mizuno, Komei: *See*—
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.

Mobil Oil Corporation: *See*—
Fisher, Robert E., 3,676,539.
Frangatos, Gerassimos, 3,676,347.
McKee, Horace L., 3,675,771.
Miale, Joseph N., 3,676,369.
Plank, Charles J.; and Rosinski, Edward J., 3,676,330.

Mobus, Gunter, to Vaillant, Joh., KG. Gas burner control apparatus for operating a piezoelectric ignition system in conjunction with the gas valves. 3,676,041, Cl. 431-47.000.

Moczar, Elemer: *See*—
Moczar, Madeleine Csanadi; Moczar, Elemer; and Payrau, Paul Bertrand, 3,676,298.

Moczar, Madeleine Csanadi; Moczar, Elemer; and Payrau, Paul Bertrand, to Etablissements Public: Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the treatment of organs to be used as grafts, notably animal or human corneas. 3,676,298, Cl. 195-1.700.

Moden, James R., to AMH Corporation. Piped buttonhole construction. 3,675,279, Cl. 24-202.000.

Modern Engineering Company, Inc.: *See*—
Lamping, Robert F., 3,675,678.

Modern Industries, Incorporated: *See*—
Schneider, Franklin R.; and Lanphear, Jerry D., 3,676,694.

Modes, Edward E. Adjustable pressure responsive transducer. 3,676,620, Cl. 200-83.00s.

Moeller & Neumann GmbH: *See*—
Neumann, Klaus, 3,675,909.

Moffitt, Jerry T.: *See*—
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., 3,676,822.

Moleyre, Jacques: *See*—
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,676,496.

Molly, Hans. Crescent machine. 3,676,027, Cl. 418-71.000.

Molof, Alan H.: *See*—
Zuckerman, Mathew M.; and Molof, Alan H., 3,676,334.

Momm, Anneliese Geb. Koziokek: *See*—
Dobbelstein, Arnold; Hille, Hans-Dieter; and Momm, Anneliese Geb. Koziokek, 3,676,403.

Monogram Industries, Inc.: *See*—
Roberts, George C.; and Dotson, Donald A., 3,675,774.

Monsanto Company: *See*—
Burd, John W., 3,675,619.
Gruber, Bernard A., 3,676,293.
Hulstein, Calvin, 3,676,039.
Kim, Dong W., 3,676,244.
McLeod, Richard K., 3,676,515.

Monsanto Research Corporation: *See*—
Deibert, Max C., 3,676,222.

Montanwerke Walter GmbH: *See*—
Mayer, Kurt, 3,675,290.

Montecatini Edison S.p.A.: *See*—
Bedetti, Gianfranco, 3,676,060.
Garilli, Francesco; and Marino, Michelangelo, 3,675,489.
Severini, Febo; Valvassori, Alberto; and Tavazzani, Carlo, 3,676,528.

Moog Industries, Inc.: *See*—
Scheublein, William A., Jr.; and Fister, Louis P., 3,675,941.

Moor, Herman L., to Braner Engineering, Inc. Rod coil press. 3,675,569, Cl. 100-700.000.

Moore, Peter N.; and Pierce, Leo F. Splash guard for trucks. 3,675,943, Cl. 280-154.50r.

Moran, Leland G.: *See*—
Flautt, Martin C.; Moran, Leland G.; and McCombs, Frank P., 3,676,287.

Morane, Bruno; Paoletti, Charles; and Terrasse, Gilles, to L'Oreal. Apparatus for dispensing two fluids simultaneously. 3,675,821, Cl. 222-80.000.

Morane, Bruno P., to L'Oreal. Self cleaning valve. 3,675,825, Cl. 222-148.000.

Moreau, Andre Jules Pierre, to Societe: Etablissements Davey Bickford Smith & Cie and Societe Anonyme Francaise. Explosive device. 3,675,574, Cl. 102-24.000.

Moreau, Wayne M.; and Rottmann, Hans R., to International Business Machines Corporation. Optical mask with integral spacers and method of making. 3,676,002, Cl. 355-133.000.

Morehouse Industries, Inc., mesne: *See*—
Brown, Donald J., 3,675,674.

Moreland, Billy Ray: *See*—
Seale, Virgil L.; Moreland, Billy Ray; and De Shazo, James Derwin, 3,676,501.

Morgan Construction Company: *See*—
Sieurin, Donald, 3,675,456.

Morgan, Johnson T. Cover for waste container. 3,675,813, Cl. 220-36.000.

Morgan, Peter E. D., to Research Corporation. Pressure calcintering. 3,676,079, Cl. 23-345.000.

Mori, Masao, to Minolta Camera Kabushiki Kaisha. Film locking device in camera. 3,675,555, Cl. 95-31.0fm.

Mori, Yoshibumi, to Nippon Telegraph and Telephone Public Corporation. Satellite communication system. 3,676,778, Cl. 325-4.000.

Morin, Louis F., to Everflex Products, Inc. Coupler for reinforced hose. 3,675,951, Cl. 285-39.000.

Morinaga, Akira: *See*—
Akaiki, Seiji; and Morinaga, Akira, 3,676,024.

Morinaga, Kenzo: *See*—
Nakajima, Junichi; Araki, Kazumi; and Morinaga, Kenzo, 3,676,301.

Morita, Akiyoshi; and Itoh, Yukio, to Victor Company of Japan, Ltd. Jitter correction system. 3,676,583, Cl. 178-6.6tc.

Morrey, Walter T., to Bendix Corporation, The. Source independent power supply. 3,676,768, Cl. 323-22.00t.

Morris, Andrew W.; and Norman, Reginald J., to Australian Paper Manufacturers Limited. Corrugating paperboard. 3,676,247, Cl. 156-205.000.

Morris, Carrol V.: *See*—
Davidson, Kenneth H.; and Morris, Carrol V., 3,675,721.

Morris, Herbert C.; and Dorn, Peter, to Texaco Inc. Motor fuel composition. 3,676,089, Cl. 44-62.000.

Morris, Philip, Incorporated: *See*—
Braginetz, Paul A., 3,675,323.

Mortl, Gunther Lorenz, to Oesterreichisch-Amerikanische Magnesit A.G. Refractory, fired magnesia brick. 3,676,163, Cl. 106-58.000.

Morton-Norwich Products, Inc.: *See*—
Heskett, Don E.; Hoover, Frank Kryder; and Burkhalter, Robert, Jr., 3,675,777.

Moseley, Royston L.; and Knowles, Peter M., to Henry Beakbane (FORTOX) Limited. Corrugated covers. 3,676,286, Cl. 161-109.000.

Moser, Billy G.: *See*—
Paine, T. O., Administrator of the National; Aeronautics and Space Administration with respect; to an invention of; Moser, Billy G.; and Landel, Robert F., 3,675,712.

Mosier, Benjamin. Production of weighted microcapsular materials. 3,676,363, Cl. 252-316.000.

Moss, Charles W., to Tension Structures Inc. Prefabricated dome-type shelter. 3,675,380, Cl. 52-80.000.

Moss, Herbert Irwin; and Hockings, Eric Francis, to RCA Corporation. Magnetic head with modified grain boundaries. 3,676,610, Cl. 179-100.2.

Motorola, Inc.: *See*—
Buchanan, John K., 3,676,700.
Musa, Fuad H., 3,676,801.
Schafft, Hugo W., 3,676,722.
Schendel, Donald D., Jr., 3,676,712.

Mott, George R.; and Van Wagner, Edward M., to Xerox Corporation. Reflex xerographic imaging system. 3,676,118, Cl. 96-1.500.

Mottinger, Archie. Concrete breaker. 3,675,973, Cl. 299-88.000.

Mouquin, Paul-Louis, to Valjoux S.A. Time-piece with a calendar indicator and chronograph mechanism. 3,675,412, Cl. 58-58.000.

Mowrey, Rowland G., to Eastman Kodak Company. Photographic stabilizer compositions. 3,676,136, Cl. 96-56.000.

Moyer, James D., to North American Rockwell Corporation. Pattern mechanism for circular knitting machines. 3,675,445, Cl. 66-50.00b.

Moyroud, Louis M. Photographic type-composing. 3,675,560, Cl. 95-4.50r.

Mueller, Kurt Hugo, to Bell Telephone Laboratories, Incorporated. Initialization of adaptive control systems. 3,676,804, Cl. 333-18.000.
Mueller, Otto. Safety mechanism for pressure gauge. 3,675,487, Cl. 73-414.000.
Muhler, Joseph C., to Indiana University Foundation. Anticariogenic dental amalgam. 3,676,112, Cl. 75-173.00r.
Mulcahy, Harry W.; and Russell, Thomas B., to AMSTED Industries Incorporated. Dipper tooth assembly. 3,675,350, Cl. 37-142.00a.
Mulgueen, John J.; and Schoettly, Edward, to Vishay Intertechnology, Inc. Gear-driven trimming potentiometer. 3,676,824, Cl. 338-162.000.
Muller, Georges; and Bardoneschi, Roland, to Roussel-UCLAF. 1-Oxa-A-nor-steroids. 3,676,461, Cl. 260-343.300.
Muller, Hermann: *See*—
Wilsch, Herbert; and Muller, Hermann, 3,675,996.
Muller, Marcel: *See*—
Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, 3,676,467.
Muller, Peter: *See*—
Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, 3,676,467.
Muller, Roman, to Gebruder Buhler AG. Grain cleaning machine. 3,675,697, Cl. 146-253.000.
Munder, Johannes: *See*—
Scheler, Siegfried; and Munder, Johannes, 3,676,132.
Mundinger, William D.; and Marsh, Ronald W., to Pullman Incorporated. Pneumatic discharge arrangement for hoppers. 3,675,975, Cl. 302-52.000.
Munro, Bradley L.: *See*—
Haskell, Donald M.; and Munro, Bradley L., 3,676,516.
Munschauer, Frederick E., Jr.; and Trautman, George H., Jr., to Niagara Machine & Tool Works. Shiftable press brake die. 3,675,463, Cl. 72-448.000.
Murata, Eiji; and Ito, Kohuku, to Honeywell Inc. Diaphragm. 3,675,540, Cl. 92-98.000.
Muratani, Takuro; Ogawa, Akira; and Nosaka, Kunishi, to Kokusai Denshin Denwa Kabushiki Kaisha. Demodulation apparatus for a time-divisional multiplex phase-shift keyed signal of burst mode. 3,676,593, Cl. 178-66.00a.
Murphree, Francis J.; and Catano, Paul S., to United States of America, Navy. Submarine propeller cavitation noise simulator. 3,676,802, Cl. 332-9.00r.
Murray, Gregory J.; and Tarrant, Fred K., to Tarrant Manufacturing Company. Vacuum type debris collector with scraper blade. 3,675,266, Cl. 15-340.000.
Murray Machinery, Inc.: *See*—
Lemke, Donald L.; and Ostrander, Ronald D., 3,675,866.
Murray, Robert W.; and Story, Paul R., to Bell Telephone Laboratories, Incorporated. Antiozonant rubber compositions. 3,676,394, Cl. 260-45.90r.
Murthy, Yelahanka K. S.: *See*—
Thiemann, Josef; Murthy, Yelahanka K. S.; and Coronelli, Carolina, 3,676,490.
Musa, Fuad H., to Motorola, Inc. Stabilized complementary micropower square wave oscillator. 3,676,801, Cl. 331-116.00r.
Musliner, Walter J., to Eastman Kodak Company. Process for forming dye images. 3,676,135, Cl. 96-54.000.
Muto, Masataro: *See*—
Takezawa, Isoe; Muto, Masataro; and Hori, Koichi, 3,675,606.
Myer, Clifford E., to Xercon, Inc., mesne. Light-responsive switching circuit. 3,676,685, Cl. 250-206.000.
Myers, Lawrence A., to Chore-Time Equipment, Inc. Poultry waterer. 3,675,627, Cl. 119-72.000.
Myreen, Bertel, to Paraisten Kalkki Oy. Method and device for measuring the temperature of material in a rotatory furnace. 3,675,467, Cl. 73-351.000.
Nagao, Kameji: *See*—
Hara, Hikoharu; Oishi, Yasushi; and Nagao, Kameji, 3,676,141.
Nagase, Kaneomi: *See*—
Taki, Hiromitsu; Hayakawa, Shigeru; and Nagase, Kaneomi, 3,676,351.
Nagy, Ernest J.; and Shaver, William R., to Pullman Incorporated. Chain actuated railway hopper gate. 3,675,591, Cl. 105-253.000.
Naiman, Charles S.; and Pompian, Stuart D., to Sanders Associates, Inc. Laser radar system. 3,676,003, Cl. 356-5.000.
Nakajima, Hayato: *See*—
Takehisa, Masaaki; Senrui, Shiro; and Nakajima, Hayato, 3,676,419.
Nakajima, Junichi; Araki, Kazumi; and Morinaga, Kenzo, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing L-histidine. 3,676,301, Cl. 195-29.000.
Nakajima, Rokuro: *See*—
Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Rokuro, 3,676,067.
Nakajima, Yasuo, to Nissan Motor Company Limited. Intake manifold vacuum control system. 3,675,632, Cl. 123-97.00b.
Nakajima, Yasuo; and Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Air-pollution preventive system for motor vehicles. 3,675,633, Cl. 123-119.00a.
Nakamura, Matsuaki: *See*—
Akashi, Goro; Suzuki, Osamu; and Nakamura, Matsuaki, 3,676,217.
Nakamura, Totaro: *See*—
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.
Nakanishi, Susumu: *See*—
O'Shea, Daniel P.; and Nakanishi, Susumu, 3,676,427.
Nakayama, Fumio: *See*—
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.
Nalco Chemical Company: *See*—
Elo, Arpad, Jr.; and Broersma, Frank R., 3,676,063.
Roberts, Melvin L.; Johnson, Carl E.; and Miller, Richard C., 3,676,356.
Seale, Virgil L.; Moreland, Billy Ray; and De Shazo, James Derwin, 3,676,501.
Napolitano, Michael: *See*—
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,675,711.
Nappe, William D., to Crane Packing Company. Seal with installed spare parts. 3,675,933, Cl. 277-9.000.
Narda Microwave Corporation, The: *See*—
Hausner, Jerry, 3,676,751.
Narita, Shigeo: *See*—
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.
Nash, Donald H.; Nenninger, Theodore P.; and Prescott, Robert E., to Bell Telephone Laboratories, Incorporated. Pushbutton telephone dial. 3,676,607, Cl. 179-90.00k.
Nass, Louis, to Societe Anonyme dite Ameco S.A. Gantry scraper conveyor. 3,675,756, Cl. 198-36.000.
National Biscuit Company: *See*—
Griner, Arthur J.; and Ryder, George, 3,675,792.
National Cash Register Company, The: *See*—
Lockwood, George C., 3,676,717.
National Research Development Corporation: *See*—
Bickerdike, Robert Lewis; and Hughes, Garyth, 3,676,160.
Hare, George Anthony; and Smith, Alan Ernest William, 3,676,115.
Kay, Leslie; Maginness, Maxwell Glynn; and Cook, Graham Bramwell, 3,675,472.
Lindsey, Alan Sidney; and Hunt, Sydney Edwin, 3,676,399.
Simpson, David Cumming, 3,675,962.
National Steel Corporation: *See*—
McGarrity, William F., 3,676,108.
Neal, John M. Automatic raker. 3,675,543, Cl. 94-39.000.
Nechaeva, Tatyana Georgievna: *See*—
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.
Neilson, William J., to Smith International Incorporated. Bit lubrication system. 3,675,729, Cl. 175-228.000.
Nelson, Grant W.: *See*—
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., 3,676,822.
Nelson, John Richard: *See*—
Flanagan, James Loton; Kronmeyer, James Hughes; and Nelson, John Richard, 3,675,513.
Nelson, Leonard; and Wilson, Thomas, to Custom Tool & Machine Co., Inc. Side operated drawbolt for tool-carrying spindle. 3,676,120, Cl. 90-11.00a.
Nelson, Robert C.: *See*—
Clifford, Thomas J.; and Nelson, Robert C., 3,675,860.
Nenninger, Theodore P.: *See*—
Nash, Donald H.; Nenninger, Theodore P.; and Prescott, Robert E., 3,676,607.
Nesbitt, Ethan Allen: *See*—
Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, 3,676,867.
Netzer, Theodor; and Block, Hans-Jurgen, to Nitrochemie GmbH. Caseless propellant charge containing nitrocellulose in a synthetic resin. 3,676,233, Cl. 149-19.000.
Neuhouser, Donald E., to General Electric Company. Mine power system ground continuity check circuit. 3,676,739, Cl. 317-18.00c.
Neumann, Klaus, to Moeller & Neumann GmbH. Billet feed system for rolling mills. 3,675,909, Cl. 266-13.000.
Neumann, Malcolm A.; and Hunsberger, Arnold, to Cubic Corporation. Multi-level automatic storage and recovery system for aircraft. 3,675,378, Cl. 52-65.000.
Neuss, Norbert, to Lilly, Eli, and Company. Desacetylaranotin. 3,676,438, Cl. 260-243.00r.
Neutron Products, Inc.: *See*—
Ransohoff, Jackson A.; and Sarkozi, Lewis P., 3,676,675.
Neville, Raymond R.: *See*—
Collins, Neil E.; Kerber, Elwyn W.; and Neville, Raymond R., 3,676,668.
Newberry, George M.; and Wowk, Nicholas F. Liquid dispensing apparatus. 3,675,820, Cl. 222-76.000.
Newman, Albert P., to Empire Products, Inc., mesne. Multiple conductor cable connector. 3,676,837, Cl. 339-103.00r.
Newton, Victor S., to United States of America, Navy. Frequency multiplexing AGC amplifier. 3,676,792, Cl. 330-52.000.
Neyens, Wayne E.: *See*—

Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., 3,675,927.
Niagara Machine & Tool Works: *See—*
Munschauer, Frederick E., Jr.; and Trautman, George H., Jr., 3,675,463.
Nieland, Donald B. Portable goalpost. 3,675,922, Cl. 273-55.00r.
Nield, Eric, to Imperial Chemical Industries Limited. Methyl methacrylate copolymers. 3,676,404, Cl. 260-78.0ua.
Nielsen, Paul L.: *See—*
Rheineck, Alfred E.; Nielsen, Paul L.; and Khoe, Teng H., 3,676,384.
Niemann, George W.; and Shannon, Charles N., to United States of America, Navy. Digital frequency generator for coded interrogation. 3,676,780, Cl. 325-155.000.
Nikex Nehezipari Kulkereskedelmi Vallalat: *See—*
Hajduk, Jeno; and Katai, Mihaly, 3,675,852.
Nikles, Erwin, to Ciba-Geigy AG. 2-Amino-4-tertiary butylamino-1,3,5-triazines. 3,676,441, Cl. 260-249.800.
Nikles, Erwin, to Ciba-Geigy AG. Aminophenylcarbamates. 3,676,486, Cl. 260-479.00c.
Nilges, William C., to Parker-Hannifin Corporation. Automatic drain valve. 3,675,673, Cl. 137-187.000.
Nippon Concrete Industries Company, Limited: *See—*
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, 3,676,541.
Nippon Electric Company, Limited: *See—*
Kaneko, Haruo; and Yano, Kaoru, 3,676,600.
Nippon Hoso-Kyokai: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.
Nippon Kogaku K.K.: *See—*
Fujii, Tatsuo; and Watano, Yutaka, 3,676,823.
Ishizaka, Sunao, 3,675,550.
Nippon Kogaku K.K.; represented by Yutaka Sugi: *See—*
Yamamoto, Tadaaki; and Kasai, Toshiyuki, 3,675,986.
Nippon Steel Corporation: *See—*
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.
Nippon Telegraph and Telephone Public Corporation: *See—*
Mori, Yoshibumi, 3,676,778.
Nippondenso Kabushiki Kaisha: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.
Nischk, Gunter: *See—*
Wolf, Gerhard D.; Blankenstein, Gunter; and Nischk, Gunter, 3,676,525.
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, to Onoda Cement Company, Limited and Nippon Concrete Industries Company, Limited. Centrifugal casting method. 3,676,541, Cl. 264-234.000.
Nishibayashi, Yoshifumi: *See—*
Nishitani, Kazuo; Shiga, Yasuhiro; and Nishibayashi, Yoshifumi, 3,676,206.
Nishikawa, Yukiyasu; and Hidaka, Tsuneo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Positioning apparatus for article with portion determining portion of predetermined configuration. 3,676,692, Cl. 250-231.00r.
Nishio, Fumihiki: *See—*
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.
Nishitani, Kazuo; Shiga, Yasuhiro; and Nishibayashi, Yoshifumi, to Tokyo Cloth Co., Ltd. Porous coated fibrous material. 3,676,206, Cl. 117-140.00a.
Nissan Motor Company Limited: *See—*
Akaiki, Seiji; and Morinaga, Akira, 3,676,024.
Maeda, Riichi, 3,675,416.
Nakajima, Yasuo, 3,675,632.
Nakajima, Yasuo; and Hayashi, Yoshimasa, 3,675,633.
Nitrochemie GmbH: *See—*
Netzer, Theodor; and Block, Hans-Jurgen, 3,676,233.
Nittan Company Limited: *See—*
Kobayashi, Akihiro, 3,676,681.
Takahashi, Naoki, 3,676,678.
Niu, Hsien Ying: *See—*
Urry, Wilbert H.; and Niu, Hsien Ying, 3,676,469.
Nix, Fred D., to Tennessee Valley Authority. Self-suspending ammonium polyphosphate suspension fertilizer. 3,676,101, Cl. 71-34.000.
Nix, Lawrence A., Jr.; and Balthis, David L., to Westinghouse Electric Corporation. Photochromic display device utilizing light valve activation. 3,676,591, Cl. 178-7.50d.
Noguchi, Hikoji. Plastic tray for eggs. 3,675,806, Cl. 217-265.000.
Noguchi, Masahiko: *See—*
Taga, Koji; and Noguchi, Masahiko, 3,676,061.
Taga, Koji; and Noguchi, Masahiko, 3,676,062.
Nolan, Frederick J.: *See—*
Lake, Donald; Perrin, Badger; and Nolan, Frederick J., 3,675,817.
Noma, Tetsuo: *See—*
Tatsutomi, Yasuo; and Noma, Tetsuo, 3,675,634.
Nomura, Yukihiko, to Alps Electric Co., Ltd. Control mechanism for adjustable electrical device including indicating means. 3,676,827, Cl. 338-183.000.
Norco, Inc.: *See—*
Lehman, Kenneth G., 3,675,531.
Nordeen, Erwin E., to Whirlpool Corporation. Vacuum cleaner. 3,675,268, Cl. 15-350.000.
Nordine, Richard, to Copystatics Manufacturing Corporation. Automatic shut-off circuit for copying machine. 3,676,691, Cl. 250-222.00r.
Nordson Corporation: *See—*
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,675,732.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,676,642.
Norenburg, Johannes C.: *See—*
Crawford, Duffer B.; and Norenburg, Johannes C., 3,675,434.
Norman, Rayford M. Electrical capacitor assembly with replaceable units. 3,676,753, Cl. 317-230.000.
Norman, Reginald J.: *See—*
Morris, Andrew W.; and Norman, Reginald J., 3,676,247.
North American Rockwell Corporation: *See—*
Moyer, James D., 3,675,445.
North Dakota State University Memorial Foundation: *See—*
Rheineck, Alfred E.; Nielsen, Paul L.; and Khoe, Teng H., 3,676,384.
Northern Electric Company Limited: *See—*
Hopwood-Jones, Charles Douglas, 3,675,755.
Northrop Corporation: *See—*
Wells, Robert R., 3,675,311.
Nosaka, Kunishi: *See—*
Muratani, Takuro; Ogawa, Akira; and Nosaka, Kunishi, 3,676,593.
Nowak, Dieter: *See—*
Roepenack, Horst; Nowak, Dieter; and Ploger, Fritz, 3,676,030.
Nukem Nuklear-Chemie und- Metallurgie Gesellschaft m.b.H.: *See—*
Ploger, Fritz; and Vietzke, Horst, 3,676,075.
NUKEM, Nuklear-Chemie und-Metallurgie, G.m.b.H.: *See—*
Roepenack, Horst; Nowak, Dieter; and Ploger, Fritz, 3,676,030.
Nuscher, Edwin H.; and Slater, Jack D., to Kaiser Aluminum & Chemical Corporation. Explosive composition containing ammonium nitrate and an organic sensitizer dissolved in dimethylformamide. 3,676,235, Cl. 149-39.000.
Nuse, Richard W. Device for attaching a fish hook to a fishing line. 3,675,276, Cl. 24-130.000.
Nussbaum, Claire E.: *See—*
Aikinson, James D.; Lepley, James W.; Nussbaum, Claire E.; and Stolzfus, John E., 3,675,796.
Nustad, Per Eirik, to A/S Selvaagbygg. Railing for terraces or balconies. 3,675,368, Cl. 47-34.000.
Nutting Truck and Caster Company: *See—*
Zetterlund, Stanley L.; and Skogen, Robert O., 3,675,587.
N.V. Auco: *See—*
Laupman, Robert Ronald, 3,676,706.
N.V. Hollandse Signaalapparaten: *See—*
Huizen, Corstiaan Le Comte, 3,676,784.
N.V. Machinefabrik L te Strake: *See—*
Vermeulen, Geert Jan; and Barten, Antonius Martinus, 3,675,687.
N.V. Nederlandsche Steenkolenmijnen 'Willem-Sophia': *See—*
Widdershoven, Louis Hubertus, 3,675,509.
Nystrom, Horace A., to Schlumberger Technology Corporation. Apparatus for facilitating the descent of well tools through deviated well bores. 3,675,478, Cl. 73-152.000.
Oakes, Grant A. Method of rebuilding an oxygen lance. 3,676,634, Cl. 219-76.000.
Oberai, Avtar S.: *See—*
Medvecky, Bartholomew P.; Oberai, Avtar S.; and Platt, Alan, 3,676,231.
Obermaier, Frank E., to Eaton Corporation. Three position butterfly valve. 3,675,681, Cl. 137-625.280.
Obermark, John A., to Warner Electric Brake & Clutch Company. Two speed magnetic clutch drive. 3,675,747, Cl. 192-48.200.
Oberste-Berghaus, Gerhard, to Pintsche Bamag Aktiengesellschaft. Manufacturing highly concentrated nitric acid. 3,676,065, Cl. 23-160.000.
Obidniak, Louis. Water conditioner. 3,675,775, Cl. 210-138.000.
Oblak, John M.: *See—*
Owczarski, William A.; Oblak, John M.; and Paulonis, Daniel F., 3,676,225.
O'Brien, Dennis M.; and Miller, Cole R., to Ecodyne Corporation. Method and apparatus for water softening. 3,676,336, Cl. 210-25.000.
Occidental Petroleum Corporation: *See—*
Chemtob, Elie M.; White, William R.; and Marcote, Rolando V., 3,675,773.
Ocone, Luke Ralph, to Pennwalt Corporation. Wheel assembly with tire cooling means. 3,675,699, Cl. 152-153.000.
O'Connell, Wayne T.: *See—*
Scannell, Paul R.; La Force, Phil D.; and O'Connell, Wayne T., 3,675,425.
O'Connor, Maurice J.; and Davidson, Donald J., to Sperry Rand Corporation. Power transmission. 3,675,676, Cl. 137-501.000.
Oddsen, Gustav A.: *See—*
Oddsen, Trygve R.; Oddsen, Gustav A.; and Edelson, Leo, 3,675,597.
Oddsen, Trygve R.; Oddsen, Gustav A.; and Edelson, Leo. Table top support. 3,675,597, Cl. 108-136.000.
Oertel, Gunter: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.
Oesterreichisch-Amerikanische Magnesit A.G.: *See—*

Mortl, Gunther Lorenz, 3,676,163.
Officine Meccaniche Santa Lucia A.S.A.: *See—*
Piattelli, Giuseppe, 3,675,868.
Ogawa, Akira: *See—*
Muratani, Takuro; Ogawa, Akira; and Nosaka, Kunishi, 3,676,593.
Ogawa, Osamu, to Fuji Heavy Industries, Ltd. Liquid transporting tank for tank cars. 3,675,670, Cl. 137-1.000.
Ohio State University, The: *See—*
Libby, Charles C.; and McDaniel, Raymond C., 3,676,720.
Ohkubo Kinji; Hayashi, Katsumi; and Sano, Kazuya, to Fuji Photo Film Co., Ltd. Photographic negative material for color diffusion transfer process. 3,676,124, Cl. 96-29.00d.
Ohno, Richard J., to Sargent & Company. Fish mouth implements. 3,675,359, Cl. 43-53.500.
Ohno, Toshihiko, to Rion Kabushiki Kaisha. Viscometer. 3,675,470, Cl. 73-59.000.
Oishi, Yasushi: *See—*
Hara, Hikoharu; Oishi, Yasushi; and Nagao, Kameji, 3,676,141.
Mizuki, Eiichi; Oishi, Yasushi; and Sawahara, Masao, 3,676,137.
Olin Corporation: *See—*
Bakoledis, Andrew G., 3,675,838.
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,676,088.
Pryor, Michael J.; and Popplewell, James M., 3,676,292.
Shum, John, Jr., 3,675,417.
Speed, Sidney E., 3,676,071.
Turley, Richard J., 3,676,532.
Wieser, Peter F.; and Dore, James E., 3,676,111.
Olin Mathieson Chemical Corporation: *See—*
Dolomont, Allan A., 3,676,309.
Pryor, Michael J.; and Anthony, William H., 3,676,113.
Oliver, Kenneth L., to Sperry Rand Corporation. Control stick transducer. 3,676,818, Cl. 338-2.000.
Olivetti, Ing. C., & C., S.p.A.: *See—*
Perucca, Vincenzo, 3,675,753.
Olson, David A., to Stackpole Carbon Company. Screw actuated linear motion potentiometer. 3,676,825, Cl. 338-181.000.
Olson, Gene E.: *See—*
Knudsen, Ra-mond G.; Price, James W.; and Olson, Gene E., 3,675,516.
Olson, James R.: *See—*
Wright, John F.; and Olson, James R., 3,676,350.
Olson, Vernon. Quick disconnect clutch. 3,675,749, Cl. 192-56.00r.
Olson, Wallace A. Apparatus for assisting in the curing of concrete and heating. 3,676,641, Cl. 219-200.000.
O'Mant, Derrick Michael: *See—*
Foden, Frederick Roger; and O'Mant, Derrick Michael, 3,676,464.
Omega Louis Brandt & Frere S.A.: *See—*
Leu, Francois J.; Tosin, Peter M.; and Werner, Ernst, 3,676,696.
Ono, Mitsuaki: *See—*
Kobayashi, Fukashi; Ono, Mitsuaki; and Kuroe, Akio, 3,676,612.
Ono, Taisuke: *See—*
Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, 3,675,324.
Onoda Cement Company, Limited: *See—*
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, 3,676,541.
Onopchenko, Anatoli; Schulz, Johann G. D.; and Williamson, Roger C., to Gulf Research & Development Company. Process for preparing phenyl sulfone carboxylic acids. 3,676,488, Cl. 260-524.00r.
Oosterveld, Marinus Willem Cornelis, to LIPS N.V. Nozzle for ship's propeller with water ejection along the trailing edge of the nozzle. 3,675,424, Cl. 60-221.000.
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., to Feldmuehle Aktiengesellschaft. Method and apparatus for feeding fibers to headbox in paper-making using an electrical field. 3,676,294, Cl. 162-192.000.
Oplinger, Donald W.: *See—*
Akers, Richard L.; and Oplinger, Donald W., 3,675,863.
Oppenheimer, Henry N.: *See—*
Goldman, David A.; and Oppenheimer, Henry N., 3,676,850.
Optical Memory Systems, Inc.: *See—*
Maure, Douglas Raymond; and Broome, Barry Glenn, 3,676,864.
Orchard, Henry J.; and Sheahan, Desmond F., to GTE Automatic Electric Laboratories, Incorporated. Polylithic crystal bandpass filter having attenuation pole frequencies in the lower stopband. 3,676,806, Cl. 333-72.000.
Ordena Trudovogo Krasnogo Znameni Ukrainsky Nauchno-Issledovatelsky Konstruktorsky Teknnologichesky Institut Sinteticheskikh Sverkhtverdykh materialov i Instrumenta Gosplana Ukrainskoi SSR: *See—*
Shulzhenko, Alexandr Alexandrovich; and Getman, Anatoly Fedorovich, 3,676,068.
Orenstein and Koppel Limited: *See—*
Luck, Dieter G., 3,675,349.
Orlovsky, Vasily Ivanovich: *See—*
Zhukovsky, Alexandr Ivanovich; Dobroskokov, Anatoly Lukich; and Orlovsky, Vasily Ivanovich, 3,675,772.
Ormand, Frederick T.; and Auger, Huey V., to Airco, Inc. Hyperbaric breathing mixture. 3,676,563, Cl. 424-366.000.
Orzechowski, John F.; and Haley, Thomas W., to Raybestos-Manhattan, Inc. Apparatus for producing yarn. 3,676,038, Cl. 425-464.000.
Osborne, Keith, to Southern California Gas Co. Heater ignition system. 3,676,042, Cl. 431-66.000.
Ose, Earl E., to Lilly, Eli and Company. Method of vaccinating swine against jowl abscess disease. 3,676,548, Cl. 424-92.000.
O'Shea, Daniel P.; and Nakanishi, Susumu, to Pfizer Inc. Process for the manufacture of the disodium salt of alpha-carboxybenzylpenicillin. 3,676,427, Cl. 260-239.100.
Oshio, Akira: *See—*
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, 3,676,541.
Oshkosh Truck Corporation: *See—*
Blank, Wallace J., 3,675,508.
Osmolovsky, Jury Anatolievich; and Kizilyaev, Anatoly Serafimovich. Device for surface hardening of partis. 3,675,452, Cl. 72-53.000.
Osmundson, Bradley M. Boat hoist. 3,675,258, Cl. 9-34.000.
Oster, John, Manufacturing Co.: *See—*
Arel, Robert W.; and Meyer, Donald R., 3,675,321.
Ostrander, Ronald D.: *See—*
Lemke, Donald L.; and Ostrander, Ronald D., 3,675,866.
Otis Engineering Corporation: *See—*
Sizer, Phillip S., 3,675,720.
Otto, C., Dr., & Comp. G.m.b.H.: *See—*
Pries, Erich E. W., 3,675,797.
Owczarski, William A.; Oblak, John M.; and Paulonis, Daniel F., to United Aircraft Corporation. Thermomechanical processing of intermediate service temperature nickel-base superalloys. 3,676,225, Cl. 148-12.700.
Owens-Corning Fiberglas Corporation: *See—*
Flautt, Martin C.; Moran, Leland G.; and McCombs, Frank P., 3,676,287.
Marzocchi, Alfred; Benson, Gustav E.; and Leach, Robert E., 3,675,704.
Russell, Robert G., 3,676,094.
Schroeder, Charles F., 3,675,702.
Stalego, Joseph P., 3,676,095.
Owens-Illinois, Inc.: *See—*
Shick, Philip E., 3,676,064.
Oxford Industries, Inc.: *See—*
Frost, Wade W., 3,675,604.
Pacini, Bruno Marcio; Price, Desmond Alfred; and Parikh, Anil Chandrakant, to Imperial Chemical Industries Limited. Polyamide filaments. 3,675,408, Cl. 57-140.0by.
Packaging Associates, Inc.: *See—*
Polansky, Sidney I., 3,675,843.
Page, Geoffrey A.: *See—*
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,676,116.
Page, George A.; Rathbun, Robert R.; and Kramer, Bruce E., to Aeronca, Inc. Method and apparatus for welding honeycomb core panel and the like. 3,676,635, Cl. 219-92.000.
Pagel, Armin B., to Eastman Kodak Company. Photographic apparatus. 3,675,565, Cl. 95-11.00l.
Paine, T. O., Administrator of the National; Aeronautics and Space Administration with respect; to an invention of; Moser, Billy G.; and Landel, Robert F. Method for controlling vapor content of a gas. 3,675,712, Cl. 165-3.000.
Palfreyman, Jack; and Middleton, Henry Edward, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Method of making a bladed rotor. 3,675,294, Cl. 29-156.80r.
Palm, William E., Jr., to Compo Industries, Inc. Shoe stiffener means and method. 3,676,250, Cl. 156-249.000.
Pannier, Karl A., Jr.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,675,891.
Paoletti, Charles: *See—*
Morane, Bruno; Paoletti, Charles; and Terrasse, Gilles, 3,675,821.
Paoletti, John P. Wallboard construction. 3,675,383, Cl. 52-222.000.
Papke, Friedrich, to Voigtlander Aktiengesellschaft. Camera with adjustment-indicating location. 3,675,552, Cl. 95-11.00v.
Paraisten Kalkki Oy: *See—*
Myreen, Bertel, 3,675,467.
Parikh, Anil Chandrakant: *See—*
Pacini, Bruno Marcio; Price, Desmond Alfred; and Parikh, Anil Chandrakant, 3,675,408.
Parikh, Jekishan R., to Upjohn Company, The Process for the 5α,6α-epoxidation of Δ^4-double bonds. 3,676,433, Cl. 260-239.550.
Parisot, Jean: *See—*
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, 3,675,426.
Parker, Arden A.: *See—*
Carlsen, Donald W.; Kotla, John J.; and Parker, Arden A., 3,676,646.
Parker, Eugene K.: *See—*
Mayo, Kenneth E.; and Parker, Eugene K., 3,675,244.
Parker, Fred W.: *See—*
Anderson, Terry P.; and Parker, Fred W., 3,676,377.
Parker-Hannifin Corporation: *See—*
Lapera, Doninic J., 3,675,853.
Nilges, William C., 3,675,673.
Zajac, Theodore S.; and George, Hal E., 3,675,539.
Parkinson, John David: *See—*
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, 3,675,474.

Parlato, Philip Joseph, to Alarm Products International, Inc. Magnetic switch. 3,676,811, Cl. 335-205.000.
Parrish, Donald Bob; and Pruitt, Ronnie Mac, to Dow Chemical Company, The. Polyurethanes. 3,676,379, Cl. 260-2.5aq.
Pars, Harry G.; and Granchelli, Felix E., to Little, Arthur D., Inc. 7,8,9,10-Tetrahydro (and 7,8,9,10,11,12-hexahydro) 6H-dibenzo[b,d]pyrans. 3,676,462, Cl. 260-345.300.
Parsons, Donald S.: *See*—
Cheney, Richard F.; and Parsons, Donald S., 3,676,083.
Partin, Melvin E., to Scan-Data Corporation. Character recognition system with simultaneous quantization at a plurality of levels. 3,676,847, Cl. 340-146.3ac.
Passmore, Edmund M.: *See*—
Loughridge, Frederick A.; Matheson, Wilfrid G.; and Passmore, Edmund M., 3,676,730.
Patitsas, George P.: *See*—
Bauer, Richard G.; and Patitsas, George P., 3,676,410.
Patterson, Charles B., to Purex Corporation, Ltd. Method for soap bars having marble-like decoration. 3,676,538, Cl. 264-75.000.
Pauliukonis, Richard S. Pneumatic/hydraulic pressure actuated positive displacement pump. 3,676,022, Cl. 417-392.000.
Paulonis, Daniel F.: *See*—
Owczarski, William A.; Oblak, John M.; and Paulonis, Daniel F., 3,676,225.
Paviak, Stanley C., to Gulf Research & Development Company. Detergent compositions. 3,676,373, Cl. 252-531.000.
Payrau, Paul Bertrand: *See*—
Moczar, Madeleine Csanadi; Moczar, Elemer; and Payrau, Paul Bertrand, 3,676,298.
Pearce, Christopher A.: *See*—
Fulton, Michael; Jones, John Darrell; and Pearce, Christopher A., 3,676,420.
Pearce, Geoffrey Downing: *See*—
Phillips, Cyril Howard; Brunton, James Charles; and Pearce, Geoffrey Downing, 3,676,185.
Pearson, Eugene S.: *See*—
Judge, Robert L.; and Pearson, Eugene S., 3,676,832.
Pecci, Angelo A. Electromagnetic motor with plural reciprocating members. 3,676,719, Cl. 310-24.000.
Peche, Gerhard: *See*—
Bahr, Alex; and Peche, Gerhard, 3,676,743.
Peck, Arland A.: *See*—
Appleby, Paul E.; Folden, Denver C.; and Peck, Arland A., 3,676,261.
Peck, Richard O., to AMSTED Industries Incorporated. Top block lifting with back block loading control. 3,675,889, Cl. 249-82.000.
Pederson, Arthur M., to Battelle Development Corporation, mesne. Apparatus for temperature measurement. 3,675,484, Cl. 73-362.0ar.
Peil, Archie W.: *See*—
Slator, Damon T.; and Peil, Archie W., 3,675,719.
Pelka, Walter: *See*—
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, 3,675,971.
Pelte, Richard: *See*—
Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, 3,676,759.
Pemberton, Troy J.: *See*—
Lane, Donald W.; and Pemberton, Troy J., 3,676,782.
Penn, Hyman B.: *See*—
Kesilman, Sol; Kravitz, Milton; and Penn, Hyman B., 3,675,598.
Pennington, Edward N., to Phillips Petroleum Company. Process control. 3,676,066, Cl. 23-198.000.
Pennwalt Corporation: *See*—
Ocone, Luke Ralph, 3,675,699.
Pennwalt Corporation, mesne: *See*—
Blake, Stephen, 3,676,498.
Pennypacker, Frank Chester, to Lindsay Specialty Products Limited. Signal splitter. 3,676,744, Cl. 317-99.000.
Percival, Herbert Warren: *See*—
Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, 3,676,105.
Perez, Arthur, to Clark Equipment Company. Two stage refrigeration plant having a plurality of first stage refrigeration systems. 3,675,441, Cl. 62-278.000.
Perri, Joseph, to Susquehanna Corporation, The. Apparatus for lining a hot top casing with insulating panels and ring. 3,675,304, Cl. 29-238.
Perrin, Badger: *See*—
Lake, Donald; Perrin, Badger; and Nolan, Frederick J., 3,675,817.
Perrino, Albert C.; and Israel, Michael G., to I.C.I. Organics Inc. Polyamide obtained by reaction of a B,B-bis(alkylamino) diethyl sulfone and a dicarboxylic acid chloride. 3,676,406, Cl. 260-78.00r.
Perry, Roger L., to Gillette Company, The. Razor blade assembly. 3,675,322, Cl. 30-32.000.
Perucca, Vincenzo, to Olivetti, Ing. C., & C., S.p.A. High-speed printer. 3,675,753, Cl. 197-18.000.
Peters, James G. Carrying device. 3,675,834, Cl. 224-45.00t.
Peters, Virgil N. Method of making nylon monofilament sinking fishing leader. 3,676,237, Cl. 154-2.000.
Peterson, Earl A.: *See*—
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,675,900.
Peterson, Gerald Henry, to Bell Telephone Laboratories, Incorporated. Coin telephone non-coin service. 3,676,597, Cl. 179-6.30r.
Peterson, John M.: *See*—
Girard, Peter F.; and Peterson, John M., 3,675,582.
Petigara, Ramesh: *See*—
Yale, Harry Louis; and Petigara, Ramesh, 3,676,445.
Pfefferle, William C.: *See*—
Dalson, Milton H.; Gallagher, James P.; and Pfefferle, William C., 3,676,328.
Dalson, Milton H.; and Pfefferle, William C., 3,676,329.
Pfeiffer, Dieter. Driving, steering and braking system for boats. 3,675,612, Cl. 115-12.00r.
Pfizer Inc.: *See*—
Goldman, Irving M.; and Larson, Jerry K., 3,676,428.
Kadin, Saul B., 3,676,463.
O'Shea, Daniel P.; and Nakanishi, Susumu, 3,676,427.
Pflanz, Herbert M., to Allis-Chalmers Manufacturing Company. High voltage electrical circuit breaker with preinsertion resistor during closing. 3,676,621, Cl. 200-144.0ap.
Pharmacia AB: *See*—
Ingelman, Bjorn G.; and Ceska, Miroslav, 3,676,303.
Pharriss, Bruce B.; and Anliker, Max, to Alza Corporation. Intrauterine contraceptive device. 3,675,647, Cl. 128-130.000.
Pharriss, Bruce B.; and Anliker, Max, to Alza Corporation. Intrauterine contraceptive device. 3,675,648, Cl. 128-130.000.
Phelps, Harold E., to Phelps, Harold, Inc. Carburetor. 3,675,907, Cl. 261-39.000.
Phelps, Harold, Inc.: *See*—
Phelps, Harold E., 3,675,907.
Phillips, Cyril Howard; Brunton, James Charles; and Pearce, Geoffrey Downing, to British Cellophone Limited. Heat-sealable moistureproof wrapping material. 3,676,185, Cl. 117-68.500.
Phillips, Gary E.: *See*—
de Gelder, Jacob; and Phillips, Gary E., 3,675,362.
Phillips, James W., to Dwyer Instruments, Inc. Molded plastic flowmeter. 3,675,481, Cl. 73-209.000.
Phillips, Nathan D.: *See*—
Dolansky, Ladislav; and Phillips, Nathan D., 3,676,595.
Phillips Petroleum Company: *See*—
Arens, James L.; and Staten, Hi W., 3,676,653.
Burk, Marvin C., 3,676,649.
Dollinger, Robert E., 3,676,168.
Doss, Richard C.; and Jones, Faber B., 3,676,201.
Douglas, Gary D.; and Eaves, Billy J., 3,675,578.
Fahey, Darryl R., 3,676,421.
Haskell, Donald M.; and Munro, Bradley L., 3,676,516.
Heckelsberg, Louis F., 3,676,520.
Hobbs, James W.; and Long, George W., 3,676,304.
Horvath, Bertalan, 3,676,417.
Hsieh, Henry L.; and Buck, Ollie G., 3,676,407.
Johnson, Marvin M.; and Tabler, Donald C., 3,676,332.
Keene, William A., 3,675,432.
Lane, Donald W.; and Pemberton, Troy J., 3,676,782.
Louthan, Rector P., 3,676,166.
Mills, King L., 3,676,324.
Pennington, Edward N., 3,676,066.
Pitchford, Armin C., 3,676,331.
Rion, Pat F., 3,675,901.
Scruggs, Jack G.; and Brady, Donnie G., 3,676,484.
Tabler, Donald C., 3,676,513.
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.
Phua, Mee See: *See*—
Plakas, Chris J.; and Phua, Mee See, 3,676,584.
Physitech, Inc.: *See*—
Starer, Robert L., 3,676,736.
Piacesi, Dante, Jr.: *See*—
Sternberg, Hyman M.; Piacesi, Dante, Jr.; and Katz, Howard, 3,675,577.
Piattelli, Giuseppe, to Officine Meccaniche Santa Lucia A.S.A. Machine for beaming knitted fabrics of common and anti-ladder type or the like on to dyeing beams or cardboard rollers. 3,675,868, Cl. 242-67.100.
Pichal, Henri T., to Honeywell Information Systems, Inc. High gain, ultra linear detector for frequency modulation. 3,676,785, Cl. 329-103.000.
Pied, Jean-Philippe, to Societe Ethylene Plastique. Stabilisers for polysulphides. 3,676,395, Cl. 260-45.90r.
Pierce, Leo F.: *See*—
Moore, Peter N.; and Pierce, Leo F., 3,675,943.
Pierce, Ruth B. Fog generator for insecticides and the like. 3,675,360, Cl. 43-129.000.
Pietsch, Roy; and Lewis, Bernard L., to Radiation Incorporated. Liquid crystal optical cell with selected energy scattering. 3,675,989, Cl. 350-160.00r.
Piirma, Aleksander, to Goodyear Tire & Rubber Company, The. Polyesters stabilized by phosphorus compounds. 3,676,393, Cl. 260-45.70p.
Pillsbury Company, The: *See*—
Meade, Reginald E., 3,675,393.
Meyer, Byron W.; and Wright, William F., 3,676,032.
Rejsa, Jack J.; and Meyer, James A., 3,675,567.
Pim, Kendall A.: *See*—
Berlincourt, Don A.; and Pim, Kendall A., 3,676,724.
Pines, Seemon H.: *See*—
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., 3,676,480.

Pines, Seemon H.; and Sletzinger, Meyer, to Merck & Co., Inc. Oxazole and oxazol-5-one derivatives. 3,676,453, Cl. 260-307.00r.
Pingry, Carl O., III: *See—*
Hollaway, John T.; and Pingry, Carl O., III, 3,676,859.
Pintsche Bamag Aktiengesellschaft: *See—*
Oberste-Berghaus, Gerhard, 3,676,065.
Pirig, Wolf-Dieter: *See—*
Grimm, Dieter; Kandler, Joachim; Merkenich, Karl; and Pirig, Wolf-Dieter, 3,676,352.
Pirrello, Angelo, to Clinton Industries, Inc. Automatic emblem sewing apparatus. 3,675,602, Cl. 112-121.290.
Pitchford, Armin C., to Phillips Petroleum Company. Upgrading of crude oils. 3,676,331, Cl. 208-112.000.
Pitt, Colin G., to Lilly, Eli, and Company. Benz anthracene steroid analogue. 3,676,502, Cl. 260-613.00r.
Pivar, Stewart. Apparatus for molding hollow plastic articles. 3,676,037, Cl. 425-435.000.
Placek, Eugene W., to Van Dorn Company. Method and apparatus for infrared heating. 3,675,905, Cl. 263-2.00r.
Plakas, Chris J.; and Phua, Mee See. Echo coincidence ultrasonic scanning. 3,676,584, Cl. 178-6.800.
Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Zeolite-containing catalyst, synthesis and use thereof. 3,676,330, Cl. 208-111.000.
Plasser, Franz; and Theurer, Josef. Mobile track tamping machine. 3,675,581, Cl. 104-12.000.
Platou, Jan Hendrik. Process for making floatable cords. 3,675,532, Cl. 87-1.000.
Platt, Alan: *See—*
Medvecky, Bartholomew P.; Oberai, Avtar S.; and Platt, Alan, 3,676,231.
Platz, Stephan: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Ploetz, Theodor: *See—*
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., 3,676,294.
Ploger, Fritz: *See—*
Roepenack, Horst; Nowak, Dieter; and Ploger, Fritz, 3,676,030.
Ploger, Fritz; and Vietzke, Horst, to Nukem Nuklear-Chemie und-Metallurgie Gesellschaft m.b.H. Apparatus for separating uranium from an aqueous solution. 3,676,075, Cl. 23-285.000.
Plumat, Emile; and Van Laethem, Robert, to Glaverbel S.A. Physically strengthening bodies made of at least partly vitreous material. 3,676,097, Cl. 65-33.000.
Plumly, George W. Method of manufacturing laminated planar structure. 3,676,241, Cl. 156-62.000.
Podschus, Ernst; Dorn, Ludwig; and Heinze, Gerhard, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of highly porous bead-form silica catalyst supports. 3,676,366, Cl. 252-448.000.
Polansky, Sidney I., to Packaging Associates, Inc. Collapsible tote bag. 3,675,843, Cl. 229-54.000.
Polaris Chemical Corporation: *See—*
Putnam, Robert C.; and Young, Jeffrey W., 3,676,389.
Polaroid Corporation: *See—*
Land, Edwin H.; and Erlichman, Irving, 3,675,551.
Stephens, Robert K., 3,676,123.
Pomathios, Jacques: *See—*
Leopold, Henri; and Pomathios, Jacques, 3,676,128.
Pomeranz, Jehoshua N.: *See—*
Donofrio, Nicholas M.; and Pomeranz, Jehoshua N., 3,676,704.
Pommerening, Uwe A.: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,676,606.
Pompian, Stuart D.: *See—*
Naiman, Charles S.; and Pompian, Stuart D., 3,676,003.
Ponce, Lucien G. Adjustable stamping press stock guide. 3,675,462, Cl. 72-428.000.
Poot, Albert Lucien; Van Besauw, Jan Frans; and Depoorter, Henri, to Agfa-Gevaert. Diazotype recording process and material used therein. 3,676,133, Cl. 96-49.000.
Poot, Albert Lucien; and Depoorter, Henri, to Agfa-Gevaert. Formation of dyes suited for reproduction purposes. 3,676,138, Cl. 96-75.000.
Poot, Albert Lucien; and Depoorter, Henri, to Agfa-Gevaert. Diazo recording. 3,676,140, Cl. 96-91.000.
Popplewell, James M.: *See—*
Pryor, Michael J.; and Popplewell, James M., 3,676,292.
Portage Research & Development Corporation: *See—*
Krivis, Alan F., 3,676,072.
Porter Pain Co., mesne: *See—*
Davie, William R., 3,676,388.
Potter, Charles, to Amvit. Pipe stopper for bell and spigot type of tile. 3,675,685, Cl. 138-89.000.
Poumakis, Eleuthere. Random access magnetic storage system with movable transducer. 3,676,868, Cl. 340-174.10c.
Powell, Thurman O. Combination elevator and spider. 3,675,278, Cl. 24-249.0dp.
PPG Industries, Inc.: *See—*
Cathers, William P., 3,675,788.
Coleman, George E., 3,676,673.
D'Alelio, Gaetano F., 3,676,398.
Drummond, Warren W., 3,675,872.
Hahn, Ernest A., 3,676,192.
Pratt, George W., Jr., to Massachusetts Institute of Technology. Multiple-frequency laser apparatus and method. 3,676,795, Cl. 331-94.500.
Pratt, Leslie Raymond, to Churchill, Charles, Limited. Gear and profile rolling machines. 3,675,454, Cl. 72-108.000.
Pre-Heat Welding Company, Inc.: *See—*
Borkoski, Stanley B., 3,675,309.
Prentice, James S., to Esso Research and Engineering Company. Method of making a non-woven polymer laminate. 3,676,242, Cl. 156-62.400.
Prescott, Robert E.: *See—*
Nash, Donald H.; Nenninger, Theodore P.; and Prescott, Robert E., 3,676,607.
Price, Desmond Alfred: *See—*
Pacini, Bruno Marcio; Price, Desmond Alfred; and Parikh, Anil Chandrakant, 3,675,408.
Price, James W.: *See—*
Knudsen, Ra-mond G.; Price, James W.; and Olson, Gene E., 3,675,516.
Price-Pfister Brass Mfg. Co.: *See—*
Lyon, John K., 3,675,682.
Pries, Erich E. W., to Otto, C., Dr., & Comp. G.m.b.H. Charging car for coke ovens. 3,675,797, Cl. 214-35.00r.
Pringle, William L.: *See—*
Bateson, Norman E.; and Pringle, William L., 3,675,592.
Pringle, William L., to Pullman Incorporated. Highway trailer vehicle with offset truss structure. 3,675,964, Cl. 296-1.00a.
Probst, Richard O., to Ransburg Electro-Coating Corporation. Method of electrostatic spraying. 3,676,194, Cl. 117-93.40r.
Procedyne Corporation: *See—*
Staffin, Robert; Ricci, Roy J.; and Juels, Ronald J., 3,676,647.
Procter & Gamble Company, The: *See—*
Baker, Joseph S.; Marsan, Mario S.; and Duncan, Robert C., 3,675,654.
Crawford, Robert J., 3,676,505.
Crawford, Robert J., 3,676,506.
Edwards, James B.; and Haug, Warren R., 3,676,152.
Zaki, Wahib Nassif; and Biard, Daniel Guy Jean, 3,676,374.
Propper Manufacturing Co., Inc.: *See—*
Speelman, Irving A., 3,675,486.
Protzman, Thomas F.; and Magidson, William H., to Staley, A. E., Manufacturing Company. Color television tube fabrication. 3,676,127, Cl. 96-36.100.
Protzman, Thomas F., to Staley, A. E., Manufacturing Company. Predetermined chemical reactions in photographic imagewise configuration. 3,676,145, Cl. 96-115.000.
Protzman, Thomas F., to Staley, A. E., Manufacturing Company. Controlling predetermined chemical reactions in photographic imagewise configuration. 3,676,146, Cl. 96-115.000.
Prugger, Hans; and Torge, Reimund, to Carl Zeiss-Stiftung; d/b/a and Zeiss, Carl. Device for the spectrochemical determination of the concentration of an element in a sample. 3,676,004, Cl. 356-87.000.
Pruitt, Ronnie Mac: *See—*
Parrish, Donald Bob; and Pruitt, Ronnie Mac, 3,676,379.
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, to Olin Corporation. Composite article. 3,676,088, Cl. 29-199.000.
Pryor, Michael J.; and Anthony, William H., to Olin Mathieson Chemical Corporation. Aluminum-zinc-boron alloys. 3,676,113, Cl. 75-146.000.
Pryor, Michael J.; and Popplewell, James M., to Olin Corporation. Composites of glass-ceramic-to-metal seals and method of making same. 3,676,292, Cl. 161-196.000.
Pullman Incorporated: *See—*
Bateson, Norman E.; and Pringle, William L., 3,675,592.
Crawford, Duffer B.; and Norenburg, Johannes C., 3,675,434.
Mundinger, William D.; and Marsh, Ronald W., 3,675,975.
Nagy, Ernest J.; and Shaver, William R., 3,675,591.
Pringle, William L., 3,675,964.
Schuller, James J., 3,675,590.
Purdie, Angus John Challis: *See—*
Woodward, Anthony Ian; and Purdie, Angus John Challis, 3,676,175.
Woodward, Anthony Ian; Purdie, Angus John Challis; and Way, Anthony Paul, 3,676,189.
Purex Corporation, Ltd.: *See—*
Patterson, Charles B., 3,676,538.
Putnam, David T., to International Business Machines Corporation. Free particle impact machining process and apparatus employing the same. 3,675,373, Cl. 51-9.000.
Putnam, Robert C.; and Young, Jeffrey W., to Polaris Chemical Corporation. Flame proofing compositions. 3,676,389, Cl. 260-29.4va.
Pyronics Inc.: *See—*
Sellors, John, Jr.; and Shular, Howard E., 3,676,048.
Pytlewski, Louis L., to Research Corporation. Soil retardant coating and method for forming the same. 3,676,186, Cl. 117-69.000.
Quaker Oats Company, The: *See—*
Harwood, Charles C.; and Holtz, William E., Jr., 3,675,855.
Quanta Welding Company: *See—*
Anderson, David G., 3,676,636.
Anderson, David G., 3,676,637.

Quatinetz Max; Weeton, John W.; and Herbell, Thomas P., to United States of America, National Aeronautics and Space Administration. Refractory metal base alloy composites. 3,676,084, Cl. 29-182.500.

Quattlebaum, Walter J.: *See—*
Young, William O., Jr.; and Quattlebaum, Walter J., 3,675,836.
Young, William O., Jr.; and Quattlebaum, Walter J., 3,676,251.

Quenot, Andre, to Manufacture 'Quenot Mabo'. Tape measures. 3,675,334, Cl. 33-138.000.

Quigley, Norman R.; and Hansen, Marvin E. Directional grain chutes. 3,675,752, Cl. 192-5.000.

Quint, Stephen Mark; and Dalton, John Junior, to Johns-Manville Corporation. Coating for water containing hydraulic cement articles. 3,676,196, Cl. 117-96.000.

Rabinow, Jacob, 1/10 to Libman, Max L. Electrical lowering and lifting mechanism for phonograph tone arms. 3,675,932, Cl. 274-23.00a.

Radiation Incorporated: *See—*
Pietsch, Roy; and Lewis, Bernard L., 3,675,989.

Radiometer A/S: *See—*
Kisten, Jurgen Manfred, 3,676,319.

Rafuse, Mary J., to Sperry Rand Corporation. Liquid crystal compositions and devices. 3,675,987, Cl. 350-160.000.

Ragen, Robert A., to Singer Company, The mesne. Serial adder/subtracter utilizing counters. 3,676,658, Cl. 235-176.000.

Ragland, Frank Roweland, Jr., to RCA Corporation. Method for making a light intensity correction filter. 3,676,129, Cl. 96-38.300.

Raible, Karl J., to Aktiengesellschaft fur Brauerei-Industrie. Adsorbent for beverages. 3,676,367, Cl. 252-451.000.

Ralston Purina Company: *See—*
Miller, Timothy A.; and Hanselman, Larry R., 3,675,625.

Ramanathan, Visvanathan: *See—*
Kangle, Purushottam Janardan; Ramanathan, Visvanathan; and Argay, Rudolf, 3,676,051.

Ramey, Robert L.: *See—*
United States of America, National Aeronautics and Space Administration, 3,676,809.

Ramisch, Emil, to Siemens Aktiengesellschaft. Electric condenser with a flat tubular dielectric. 3,676,757, Cl. 317-242.000.

Randolph, August: *See—*
Schulz, Gunter; Himmelmann, Wolfgang; and Randolph, August, 3,676,144.

Randolph, Michael J.: *See—*
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., 3,676,477.

Randolph, Michael J., to Du Pont de Nemours, E. I., and Company. Method for preparing trivalent and pentavalent antimony esters of polyhydroxy compounds. 3,676,476, Cl. 260-446.000.

Ransburg Electro-Coating Corporation: *See—*
Harrison, David; and Sainz, Raul T., 3,676,197.
Probst, Richard O., 3,676,194.
Spiller, Lester L.; and Buford, Claude W., 3,676,171.

Ransohoff, Jackson A.; and Sarkozi, Lewis P., to Neutron Products, Inc. Production irradiator. 3,676,675, Cl. 250-52.000.

Rao, Durvasula V.; Sayigh, Adnan A. R.; and Ulrich, Henri, to Upjohn Company, The. Novel aminophenyl alkoxy coumarins. 3,676,436, Cl. 260-343.20r.

Rathbun, Robert R.: *See—*
Page, George A.; Rathbun, Robert R.; and Kramer, Bruce E., 3,676,635.

Raybestos-Manhattan, Inc.: *See—*
Orzechowski, John F.; and Haley, Thomas W., 3,676,038.

Raymond, Joseph Edward: *See—*
De Ritter, Elmer; and Raymond, Joseph Edward, 3,676,556.

Raymond, Richard L., to Sun Research and Development Co. Microbial production of novel hydroxyphenyl ketobutyric acids. 3,676,299, Cl. 195-28.00r.

Raytheon Company: *See—*
Caccamesi, Vincent C.; and Der Marderosian, Aaron C., 3,675,468.

Razal Albert J.: *See—*
Schwaller, Lando J.; Razal Albert J.; and White, John G., 3,675,450.

RCA Corporation: *See—*
Ahrons, Richard Wilfred, 3,676,711.
Allington, Trevor Richard, 3,676,252.
Einthoven, Willem Gerard; Jetter, Evelyn Speter; and Wheatley, Carl Franklin, Jr., 3,676,229.
McGrogan, Ellwood Patrick, Jr., 3,676,702.
Meyer, John Evert, 3,676,705.
Moss, Herbert Irwin; and Hockings, Eric Francis, 3,676,610.
Ragland, Frank Roweland, Jr., 3,676,129.
Robbins, Murray, 3,676,082.
Weimer, Paul Kessler, 3,676,590.

Read, George: *See—*
Holmes, Frank; Arias, Henry, Jr.; and Read, George, 3,675,883.

Recchia, Frank P.; and Ulrich, Henri, to Upjohn Company, The. Process for preparing di(aminophenyl)-methanes. 3,676,497, Cl. 260-570.00d.

Redel, Joseph; and Boch, Jean Baptiste Christian, to A. E. C. Societe de Chimie Organique et Biologique. Process of preparing phytone. 3,676,499, Cl. 260-593.000.

Reeder, George H., Jr. Piano construction. 3,675,527, Cl. 84-180.000.

Reese, Murray C. Holder for refuse cans. 3,675,783, Cl. 211-71.000.

Reeves, John F.: *See—*
Lickliter, Robert Paul; and Reeves, John F., 3,675,382.
Lickliter, Robert Paul; Abbott, Earl; and Reeves, John F., 3,675,957.

Reflex Corporation of Canada Limited: *See—*
White, Jay E., Jr., 3,676,666.

Regan Forge and Engineering Company: *See—*
Watkins, Bruce J., 3,675,713.

Regis Manufacturing Company: *See—*
Hajduk, Frank R., 3,675,293.
Hajduk, Frank R., 3,675,955.

Rehrig, Houston. Bakery tray. 3,675,815, Cl. 220-97.00d.

Reichelt, Bernhard: *See—*
Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, 3,676,371.

Reid, Allen F.: *See—*
Halff, Albert H.; and Reid, Allen F., 3,675,829.

Reif, Kurt, to Maschinenfabrik Andritz Aktiengesellschaft. Liquid-sealed centrifugal pump. 3,676,011, Cl. 415-111.000.

Reighter, David H., to I-T-E Imperial Corporation. Adsorption-desorption method for purifying SF_6. 3,675,392, Cl. 55-25.000.

Reineck, Ronald W.: *See—*
Svoboda, Glenn R.; and Reineck, Ronald W., 3,676,376.

Reiner, Roy H.: *See—*
Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, 3,676,557.

Reinheimer, Horst Alfred: *See—*
Forst, Steve Michael; and Reinheimer, Horst Alfred, 3,676,741.

Reinis, Gedeminas J.: *See—*
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,676,116.

Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of polyamide mouldings. 3,676,544, Cl. 264-329.000.

Rejsa, Jack J.; and Meyer, James A., to Pillsbury Company, The. Meat injection apparatus. 3,675,567, Cl. 99-257.000.

Rembold, Heinz; and Losert, Ewald, to Ciba-Geigy AG. Process for the manufacture of prepregs. 3,676,200, Cl. 117-121.000.

Remington Arms Company, Inc.: *See—*
Misevich, Kenneth W., 3,675,926.

Rempala, Chester S., to Bell & Howell Company. Microfilm transport system and trailing leader. 3,675,877, Cl. 242-209.000.

Rennie, Compton Alexander; Lockett, George Edward; and Hosegood, Samuel Brittan, to United Kingdom Atomic Energy Authority. Pentagonal core blocks for gas cooled nuclear reactors. 3,676,297, Cl. 176-58.000.

Renskers, John O., to Coilcraft, Inc. Non-circular high Q coils. 3,676,813, Cl. 336-189.000.

Research Corporation: *See—*
Dolansky, Ladislav; and Phillips, Nathan D., 3,676,595.
Morgan, Peter E. D., 3,676,079.
Pytlewski, Louis L., 3,676,186.

Research Foundation of the Washington Hospital Center: *See—*
Viktora, Josef Karel; and Baukal, Albert Jozel, 3,675,488.

Retajczyk, Theodore Frank, Jr., to Bell Telephone Laboratories, Incorporated. Method of etching materials capable of being etched with hydrofluoric acid. 3,676,240, Cl. 156-17.000.

Reust, Paul H.; and Taube, Donald R., to Essex International Inc. Lead wire inserting mechanism for stator winding apparatus. 3,675,300, Cl. 29-205.00c.

Reynolds, Anthony Edward St. Aubyn: *See—*
Conrad, John Harold; Reynolds, Anthony Edward St. Aubyn; and Gadd, Edward George, 3,676,707.

Reynolds, Beverly L., to Cybersol, Inc., mesne. Therapeutic composition. 3,676,553, Cl. 424-128.000.

Reynolds, David W.: *See—*
Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., 3,676,020.

Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., to Le Voy's, Inc. Continuous catheter flushing apparatus. 3,675,891, Cl. 251-117.000.

Reynolds, R. J., Tobacco Company: *See—*
Leffingwell, John C., 3,676,504.

Rheineck, Alfred E.; Nielsen, Paul L.; and Khoe, Teng H., to North Dakota State University Memorial Foundation. Copolymers of hydroxyalkyl methacrylates and an acrylate or methacrylate ester reacted with a partially epoxidized drying oil. 3,676,384, Cl. 260-23.0ep.

Rhone-Poulenc S.A.: *See—*
Marze, Xavier, 3,676,326.

Ricci, Roy J.: *See—*
Staffin, Robert; Ricci, Roy J.; and Juels, Ronald J., 3,676,647.

Rice, Edward J., to TRW Inc. Method for fabricating semiconductor junctions. 3,676,230, Cl. 148-187.000.

Rice, James S., to Industrial Nucleonics Corporation. Noninteracting control of moisture and fiber content of fibrous sheet during manufacture. 3,676,295, Cl. 162-198.000.

Rice, Monroe C. Wheeled carrier for chain saw. 3,675,689, Cl. 143-32.00n.

Rice, Rip G.: *See—*
Frank, Victor S.; Stahly, Eldon E.; and Rice, Rip G., 3,676,311.

Richens, Robert H.: *See—*
Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., 3,675,536.

Richter, Ronald W.: *See—*

Van Den Heuvel, Anthony P.; Richter, Ronald W.; and Joshi, Shrinivas G., 3,676,721.
Richterich, Roland, to Hoffmann-La Roche Inc. Device for automatically analyzing liquids. 3,676,080, Cl. 23-253.00r.
Ride, Jean-Louis; and Bellaton, Roland. Electrically operated fishing reel. 3,675,870, Cl. 242-84.10a.
Ridge Ply, Inc.: *See—*
Tisdale, Lucien E., 3,676,263.
Ridgewell, Brian John: *See—*
Duck, Edward William; Ridgewell, Brian John; and Locke, John Michael, 3,676,409.
Riedel, Wolfgang, to Bosch, Robert, Photokino GmbH. Film threading mechanism for cinematographic apparatus. 3,675,874, Cl. 242-192.000.
Rieger, Gilbert N.: *See—*
McLeod, Garth M.; Copeland, Clinton R.; and Rieger, Gilbert N., 3,675,287.
Riemenschneider, Wilhelm: *See—*
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.
Riess, Werner; Schaefer, Helmut; and Bayer, Bernd, to Glanzstoff AG. Acid treatment of artificial leather for improved adherence with a latex adhesive. 3,676,180, Cl. 117-47.00a.
Rieth, Kurt A., to Textron Inc. End attachment for watch bands. 3,675,284, Cl. 24-265.00b.
Riggs, Robert S.: *See—*
Appleby, Paul E.; Riggs, Robert S.; and Woodhall, Edwin S., 3,676,260.
Rigolini, Venerio J., to Whitehouse Products, Inc. Double exposure prevention system and camera. 3,675,556, Cl. 95-31.0fl.
Riley Company, The: *See—*
Linder, Kenneth C., 3,676,878.
Riley, Robert L.: *See—*
Sachs, Samuel B.; and Riley, Robert L., 3,676,203.
Rion Kabushiki Kaisha: *See—*
Ohno, Toshihiko, 3,675,470.
Rion, Pat F., to Phillips Petroleum Company. Method and apparatus for mixing materials. 3,675,901, Cl. 259-4.
Ristow, Roderick E. High efficiency vapor condenser and method. 3,675,710, Cl. 165-1.
Ritter, Gerhard: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, 3,676,631.
Ritter, Gert: *See—*
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, 3,676,632.
Ritter, Josef: *See—*
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, 3,676,632.
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwicklungs-und Verwertungsgesellschaft m.b.H. Welding machine and method. 3,676,631, Cl. 219-56.000.
Ritter, Klaus: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, 3,676,631.
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, to EVG Entwicklungs-und Verwertungsgesellschaft m.b.H. Process for manufacturing welded mesh. 3,676,632, Cl. 219-58.000.
Robbins, Murray, to RCA Corporation. Magnetic compositions. 3,676,082, Cl. 23-367.000.
Roberts & Porter, Inc.: *See—*
Hawks, Ronald W., 3,675,573.
Roberts, George C.; and Dotson, Donald A., to Monogram Industries, Inc. Marine recirculating and holding tank. 3,675,774, Cl. 210-167.000.
Roberts, Melvin L.; Johnson, Carl E.; and Miller, Richard C., to Nalco Chemical Company. Composition for the removal of hydrogen sulfide from gaseous streams. 3,676,356, Cl. 252-192.000.
Roberts, Theresa A.: *See—*
Brick, Edmund J., 3,675,528.
Robertson, H. H., Company: *See—*
Fork, Frank W., 3,676,568.
Robicon Corporation: *See—*
Blackmond, Ronald C., 3,676,766.
Robin, Michael; and Schulte, Sheldon R., to Ashland Oil & Refining Company. Phosphate esters of hindered thiobisphenols. 3,676,530, Cl. 260-949.000.
Robinet, Jean-Claude: *See—*
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, 3,676,390.
Robins, A. H., Company, Incorporated: *See—*
Helsley, Grover Cleveland, 3,676,432.
Robins, Janis, to Ashland Oil Inc. Resin compositions. 3,676,392, Cl. 260-38.000.
Robinson, Peter: *See—*
Campbell, Alastair; and Robinson, Peter, 3,676,507.
Roche, William J., to Sylvania Electric Products, Inc. Resonator ballast for arc discharge lamps. 3,676,735, Cl. 315-207.000.
Roder, Manfred: *See—*
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, 3,675,709.
Roepenack, Horst; Nowak, Dieter; and Ploger, Fritz, to NUKEM, Nuklear-Chemie und-Metallurgie, G.m.b.H. Apparatus for lubrication of compression tools for powder metallurgical purposes. 3,676,030, Cl. 425-78.000.
Roggie, William Clark, to Baker-Roos, Inc. Guard rail assembly for a platform. 3,675,736, Cl. 182-113.000.
Rohr, Otto: *See—*
Hubele, Adolf; and Rohr, Otto, 3,676,457.
Rondestvedt, Christian S., Jr.: *See—*
Mantell, Gerald J.; and Rondestvedt, Christian S., Jr., 3,676,500.
Rood, Alvin A.: *See—*
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,675,732.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,676,642.
Rose, Henry J.: *See—*
Turbak, Albin F.; and Rose, Henry J., 3,676,382.
Rose, James S.: *See—*
McLaughlin, Alexander; and Rose, James S., 3,676,380.
Rosebrook, Roy, Sr., to Anellux Systems Corporation, mesne. Booster servo controlled valve control mechanism. 3,675,890, Cl. 251-3.000.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., to Nordson Corporation. Muffler for pneumatic motor. 3,675,732, Cl. 181-36.00a.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., to Nordson Corporation. Modular apparatus for heating circulating coating material. 3,676,642, Cl. 219-301.000.
Rosenbaum, Chester K.: *See—*
Kohan, Melvin I.; Martin, Wayne H.; and Rosenbaum, Chester K., 3,676,400.
Rosenstein, Nathan, to Hartford Spinning (Canada) Ltd. Compact multi-filament textile tow and method of making the same. 3,675,409, Cl. 57-144.000.
Rosenthal, Robert W., to Gulf Research & Development Company. Process for adding methyl substituents to aromatic hydrocarbons. 3,676,514, Cl. 260-668.000.
Rosenthal, Sol Roy. Multiple puncture injector device. 3,675,766, Cl. 206-63.400.
Rosinski, Edward J.: *See—*
Plank, Charles J.; and Rosinski, Edward J., 3,676,330.
Ross, Thorvald S., Jr.: *See—*
Ross, Thorvald S., Jr.; and Consalvo, Dante V., 3,675,810.
Ross, Thorvald S., Jr.; and Consalvo, Dante V., said Consalvo, Dante V., assor to and said Ross, Thorvald S., Jr. Receptacle for waste material. 3,675,810, Cl. 220-17.000.
Rossi, Anthony J. Apparatus for extruding candy fillings having a high percentage of solids. 3,676,036, Cl. 425-209.000.
Rostron, Arthur John: *See—*
Sharples, Allan; Rostron, Arthur John; and Mc Gibbon, Graeme, 3,676,688.
Rottmann, Hans R.: *See—*
Moreau, Wayne M.; and Rottmann, Hans R., 3,676,002.
Roussel-UCLAF: *See—*
Muller, Georges; and Bardoneschi, Roland, 3,676,461.
Rowe, John Joseph, to Singer Company, The, mesne. Time domain waveform synthesizing method. 3,676,565, Cl. 35-10.400.
Rubinstein, Solomon, to General Cable Corporation. Electrical outlet box. 3,676,571, Cl. 174-65.000.
Ruffo, Angelo P., to Johnson & Johnson. Flame retardant air filter construction with thermoplastic scrim. 3,675,403, Cl. 55-524.000.
Runyan, Clarence R.: *See—*
Korodi, Miklos B.; and Runyan, Clarence R., 3,675,946.
Ruscher, Harold, Jr. Portable bathing shower. 3,675,251, Cl. 4-151.000.
Ruscitti, Tomasco, to Coster Tecnologie Speciali S.p.A. Aerosol valve. 3,675,832, Cl. 222-402.240.
Russell, Lewis K.; and Banks, James L., to Signetics Corporation. Means including a spark gap for protecting an integrated circuit from electrical discharge. 3,676,742, Cl. 317-33.00r.
Russell, Phillips G.; Guggenbickler, Leon E.; and Crawford, John H., to Brand S. Corporation. Sheet stacking apparatus. 3,675,791, Cl. 214-60.00k.
Russell, Robert G., to Owens-Corning Fiberglas Corporation. Method of coating glass fibers. 3,676,094, Cl. 65-3.000.
Russell, Stanley L.: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,676,606.
Russell, Thomas B.: *See—*
Mulcahy, Harry W.; and Russell, Thomas B., 3,675,350.
Rust, Kurt: *See—*
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,414.
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,415.
Ruth, Richard L., to Honeywell Information Systems Inc. Multiple mask registers for servicing interrupts in a multiprocessor system. 3,676,861, Cl. 340-172.500.
Rutherford, Robert Mark: *See—*
Steed, Frank Streeton; and Lawson-Tancred, Henry, 3,675,799.
Ruyle, William V.: *See—*
Sarett, Lewis H.; and Ruyle, William V., 3,676,451.
Ryan, John W.; Tomkinson, John G.; and Wieman, Paul R., to Mattel, Inc. Color responsive toy. 3,675,925, Cl. 273-101.200.
Ryder, George: *See—*
Griner, Arthur J.; and Ryder, George, 3,675,792.
Rye, Grover W.: *See—*
Griffin, Theodore F.; and Rye, Grover W., 3,675,621.
S & C Electric Company: *See—*

Evans, David Maurice; and Theodore, Roy, 3,676,629.

S & S Corrugated Paper Machinery Co., Inc.: *See*—
Saunders, Lawrence J., 3,676,264.

Sabatie, Michele: *See*—
Dubernet, Robert; and Sabatie, Michele, 3,676,576.

Sabhofer, Franz; and Krassig, Johannes, to Chemiefaser Lemzing Aktiengesellschaft. Process for the production of fleeces. 3,676,243, Cl. 156-167.000.

Sachs, Samuel B.; and Riley, Robert L., to United States of America, Interior. Semipermeable membranes. 3,676,203, Cl. 117-123.00d.

Sadwith, Howard M., to Industrial Washing Machine Corporation. Case washing machine. 3,675,665, Cl. 134-46.000.

Saggers, David Thomas, to Fisans Limited. Certain benzimidazoles as rodenticides. 3,676,545, Cl. 424-273.000.

Sainz, Raul T.: *See*—
Harrison, David; and Sainz, Raul T., 3,676,197.

Saitman, William M.: *See*—
Throckmorton, Morford C.; and Saitman, William M., 3,676,411.

Saito, Toshiya: *See*—
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.

Sakuma, Tadashi, to Kabushiki Kaisha Daini Seikosha. World timepiece. 3,675,411, Cl. 58-42.500.

Sakurai, Koichi: *See*—
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.

Sakurai, Takeshi; and Tani, Zenpei, to Sharp Kabushiki Kaisha. Method of making a PN junction device. 3,676,228, Cl. 148-171.000.

Sales Promotion Products, Inc.: *See*—
Gilmoure, Harold J., 3,675,356.

Salvarezza, Robert M.: *See*—
Haglund, Bernard F.; and Salvarezza, Robert M., 3,675,257.

Samiran, David; Cooling, Robert O.; and Fitch, Melvin G. Dental hygiene device. 3,675,645, Cl. 128-62.00a.

Sanada, Noriaki; and Ito, Masaharu, to Canon Kabushiki Kaisha. Iris diaphragm for a camera. 3,675,562, Cl. 95-64.00r.

Sandel, Herbert N. Box for holding tape cartridges. 3,675,763, Cl. 206-45.140.

Sander, Hans Walter: *See*—
Sommer, Gunter; and Sander, Hans Walter, 3,675,465.

Sanders Associates, Inc.: *See*—
Naiman, Charles S.; and Pompian, Stuart D., 3,676,003.

Sanders Nuclear Corporation: *See*—
Mayo, Kenneth E.; and Parker, Eugene K., 3,675,244.

Sands, Seymour, to Du Pont de Nemours, E. I., and Company. Tufted carpet backsized with polymeric composition. 3,676,280, Cl. 161-67.000.

Sangamo Electric Company: *See*—
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.

Sano, Kazuya: *See*—
Ohkubo Kinji; Hayashi, Katsumi; and Sano, Kazuya, 3,676,124.

Sanyo Electric Co., Ltd.: *See*—
Takemasa, Kazuo; and Komada, Hitoshi, 3,675,438.

Sarah, Thomas F., to Shakespeare of Arkansas, Inc. Selectively manual or automatic shift control for a two speed drive in a fishing reel. 3,675,502, Cl. 74-369.000.

Saralidze, Anton Lavrentievich; and Efremidi, Anatoly Lazarevich. High-voltage semiconductor rectifier unit. 3,676,762, Cl. 321-8.00r.

Sarett, Lewis H.; and Ruyle, William V., to Merck & Co., Inc. Thiazolylsalicylic acids. 3,676,451, Cl. 260-302.00r.

Sargent & Company: *See*—
Ohno, Richard J., 3,675,359.

Sarkozi, Lewis P.: *See*—
Ransohoff, Jackson A.; and Sarkozi, Lewis P., 3,676,675.

Sasabe, Kaoru, to Matsushita Electric Industrial Co., Ltd. Signal conversion system with time base compression of the input data. 3,676,862, Cl. 340-172.500.

Sato, Reiji, to Amano Corporation. Program device for producing time signals and the like. 3,675,415, Cl. 58-150.000.

Saunders, Lawrence J., to S & S Corrugated Paper Machinery Co., Inc. Shortened apparatus for producing corrugated board. 3,676,264, Cl. 156-470.000.

Sawahara, Masao: *See*—
Mizuki, Eiichi; Oishi, Yasushi; and Sawahara, Masao, 3,676,137.

Sawyer, Harold T., 17 1/2% to Beehler, Vernon D. Sonic energy cleaning method. 3,676,218, Cl. 134-1.000.

Sayigh, Adnan A. R.: *See*—
Rao, Durvasula V.; Sayigh, Adnan A. R.; and Ulrich, Henri, 3,676,436.

Sayles, Louis F. Collapsible signal assembly. 3,675,613, Cl. 116-63.00p.

Scala, Luciano C.; and Bartlett, Wilford O., to Westinghouse Electric Corporation. Non-aqueous electrophoretic compositions comprising liquid nitroalkanes as a solvent. 3,676,383, Cl. 260-22.00r.

Scan-Data Corporation: *See*—
Partin, Melvin E., 3,676,847.

Scanlan, Warren F., to Hazard Sensor Inc. Safety device for preventing electric shock. 3,676,738, Cl. 317-18.00r.

Scannell, Paul R.; La Force, Phil D.; and O'Connell, Wayne T., to United Aircraft Corporation. Variable thrust reaction motor with multiple injector orifices. 3,675,425, Cl. 60-258.000.

Scaramucci, Domer. Disc valve with molded-in-place liner and replaceable seat. 3,675,677, Cl. 137-375.000.

Scaramucci, Domer. Apparatus for molding a seat in a valve body. 3,675,888, Cl. 249-57.000.

Scarpellino, Richard: *See*—
Bentz, Alan P.; and Scarpellino, Richard, 3,676,156.

Schacht, Henry Neil. Method of cutting and packing poultry. 3,675,272, Cl. 17-52.000.

Schaefer, Helmut: *See*—
Riess, Werner; Schaefer, Helmut; and Bayer, Bernd, 3,676,180.

Schaetti, Josef. Method of and apparatus for coating fabrics. 3,676,269, Cl. 156-548.000.

Schafft, Hugo W., to Motorola, Inc. Structure for bimorph or monomorph benders. 3,676,722, Cl. 310-8.600.

Scharf, Donald R.: *See*—
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,675,732.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,676,642.

Scharschmidt, Rudolph K., to General Foods Corporation. Toaster Product and process. 3,676,151, Cl. 99-86.000.

Schaum, Gustav: *See*—
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.

Scheerer, Ernest O. Rural mail boxes. 3,675,845, Cl. 232-35.000.

Scheidmantel, David A.: *See*—
Trunzo, Floyd F.; and Scheidmantel, David A., 3,676,814.

Scheidweiler, Andreas; and Meier, Otto, to Cerberus AG. Ionization fire alarm with insulation monitoring system. 3,676,680, Cl. 250-83.56ft.

Scheler, Siegfried; and Munder, Johannes, to Kalle Aktiengesellschaft. Thermographic reproduction material and process. 3,676,132, Cl. 96-49.000.

Schendel, Donald D., Jr., to Motorola, Inc. Monolithic non-saturating storage circuit. 3,676,712, Cl. 307-291.000.

Schere, Jonathan L.: *See*—
Wohl, Charles J.; Schere, Jonathan L.; and Costello, Thomas V., 3,676,839.

Scherzer, Julius; and Albers, Edwin W., to Grace, W. R., & Co. Rare earth-hydrogen exchanged zeolites. 3,676,368, Cl. 252-455.00z.

Scheublein, William A., Jr.; and Fister, Louis P., to Moog Industries, Inc. Vehicle stability control device. 3,675,941, Cl. 280-124.00r.

Schild, A., S.A.: *See*—
Fluck, Josef, 3,675,413.

Schilson, Robert E.: *See*—
Merrill, La Vaun S., Jr.; and Schilson, Robert E., 3,676,517.

Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., to Mattel, Inc. Toy sound producing flight system. 3,675,361, Cl. 46-1.00h.

Schlievert, Lester R. Seed suspensing apparatus. 3,675,601, Cl. 111-51.000.

Schloemann Aktiengesellschaft: *See*—
Groos, Horst Hans, 3,675,457.
Veltjens, Dieter, 3,675,458.

Schlossar, Edmund, to Mattel Inc. Sound reproducing apparatus. 3,675,931, Cl. 274-11.00r.

Schlumberger Technology Corporation: *See*—
Beene, Calvin D., 3,675,950.
Lee, Jimmy G., 3,676,842.
Nystrom, Horace A., 3,675,478.

Schmelzer, Hans-Georg: *See*—
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.

Schmermund, Alfred. Control arrangements for an automatic machine tool. 3,675,537, Cl. 90-13.900.

Schmidt, Herman, to General Electric Company. Electronic digital slide rule. 3,676,656, Cl. 235-156.000.

Schmidt, Paul Gordon, to Du Pont de Nemours, E. I., and Company. Corrugated liner for recording tape cassettes. 3,675,875, Cl. 242-199.000.

Schmolka, Irving R.: *See*—
Kaneko, Thomas M.; Schmolka, Irving R.; and Compton, John W., 3,676,354.

Schneider, Arthur F. Self propelled land clearing and plowing apparatus. 3,675,724, Cl. 172-116.000.

Schneider, Franklin R.; and Lanphear, Jerry D., to Modern Industries, Incorporated. Power output accessory unit. 3,676,694, Cl. 307-10.00r.

Schneider, Kurt: *See*—
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, 3,676,544.

Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, to Knapsack Aktiengesellschaft. Sand-lime bricks and process for making them. 3,676,165, Cl. 106-117.000.

Schoeps, Knut Christian; and Astrom, Klas Johan, to Atlas Copco Aktiebolag. Rotary impact motor. 3,675,726, Cl. 173-93.000.

Schoettly, Edward: *See*—
Mulgueen, John J.; and Schoettly, Edward, 3,676,824.

Schonhorn, Harold: *See*—
Hara, Katsuyuki; and Schonhorn, Harold, 3,676,289.

Schorr, Manfred; Durckbeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Phenylene-bis-dithiocarbamic acid esters. 3,676,446, Cl. 260-294.80e.

Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, to Farbenfabriken Bayer Aktiengesellschaft. Insecticidal and acaricidal amido-thiolphosphoric acid esters. 3,676,555, Cl. 424-220.000.

Schranz, Karl-Wilhelm: *See*—
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, 3,676,143.

Schreurs, Willy P.; and Kimball, Lawrence W., to Sylvania Electric Products, Inc. Method of making fluorescent lamps. 3,676,176, Cl. 117-33.50l.

Schreurs, Willy P., to Sylvania Electric Products, Inc. Polyspectral fluorescent lamp. 3,676,728, Cl. 313-109.000.

Schrewelius, Nils Gustav, to Aktiebolaget Kanthal. Furnace for the production of glass fibers. 3,676,093, Cl. 65-1.000.

Schroeder, Charles F., to Owens-Corning Fiberglas Corporation. Pneumatic tire carcass construction. 3,675,702, Cl. 152-354.000.

Schroeder, Kenneth H.; and Kelly, George J., Jr., to Allied Chemical Corporation. Chemical strippers and method of using. 3,676,219, Cl. 134-3.000.

Schuh, Eduard, to Kienzle Apparate GmbH. Sequential key locking and releasing arrangement. 3,675,504, Cl. 74-483.0pb.

Schulenberg, John W.: *See*—
Archer, Sydney; and Schulenberg, John W., 3,676,444.

Schuller, James J., to Pullman Incorporated. Door operating mechanism. 3,675,590, Cl. 105-240.000.

Schuller, Werner Hogo Wilhelm: *See*—
Schuller, Wolfgang; and Hohlfeld, Harald, 3,676,096.

Schuller, Wolfgang; and Hohlfeld, Harald, to Schuller, Werner Hogo Wilhelm. Process and apparatus for making glass fiber structures including coating before and after attenuation. 3,676,096, Cl. 65-3.000.

Schulte, Sheldon R.: *See*—
Robin, Michael; and Schulte, Sheldon R., 3,676,530.

Schultz, Henry F. Disc implement. 3,675,725, Cl. 172-245.000.

Schultz, Herman S.; Katzenstein, William; and Williams, Earl P., to GAF Corporation. Methyl vinyl ether copolymers. 3,676,408, Cl. 260-80.30e.

Schulz, Gunter; Himmelmann, Wolfgang; and Randolph, August, to Agfa-Gevaert Aktiengesellschaft. Epoxide hardener in silver halide emulsion layer and formaldehyde and/or glyoxal hardener in adjacent protective layer. 3,676,144, Cl. 96-111.000.

Schulz, Johann G. D.: *See*—
Onopchenko, Anatoli; Schulz, Johann G. D.; and Williamson, Roger C., 3,676,488.

Schwaller, Lando J.; Razal Albert J.; and White, John G., to Akzona Incorporated. Hide pasting machine. 3,675,450, Cl. 05/03/72.

Schwaneke, Alfred E.; Falke, Wilbert L.; and Crosser, Orrin K., to United States of America, Interior. Soldering method. 3,675,310, Cl. 29-492.000.

Schwartz, Frederich William, Jr., to Jamesbury Corporation. Pressure relief valve construction for railway tank cars and the like. 3,675,679, Cl. 137-587.000.

Schwarz, Gerhard, to Compur-Werk Gesellschaft mit beschrankter Haftung & Co. Photographic camera with focal plane shutter and interchangeable objective shutter. 3,675,561, Cl. 95-53.00e.

Schwarz, Karlhans, to Bodenseewerk Geratetechnik GmbH. Directional and pitch trim indicator for automatic pilots. 3,676,843, Cl. 340-27.00r.

Schweicher, Wolfgang: *See*—
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.

Schweitzer, E. O., Manufacturing Co., Inc.: *See*—
Schweitzer, Edmund O., Jr., 3,676,740.

Schweitzer, Edmund O., Jr., to Schweitzer, E. O., Manufacturing Co., Inc. Automatically resettable fault indicator. 3,676,740, Cl. 317-22.000.

Schwoyer, William L., to Commercial Solvents Corporation. Explosive slurry having constant detonation velocity over a wide temperature range. 3,676,234, Cl. 149-38.000.

Sci-Med, Inc., mesne: *See*—
Blomquist, Arnold W., 3,675,490.

SCM Corporation: *See*—
De Weese, Duane G.; and Hanck, Ronald C., 3,676,148.
Eppler, Richard Andrew, 3,676,204.
Gary, Wilbur, 3,676,487.

Scott Paper Company: *See*—
Adams, Whitney B., 3,676,173.

Scruggs, Jack G.; and Brady, Donnie G., to Phillips Petroleum Company. Synthesis of hydroxyalkyl esters of carboxylic acids. 3,676,484, Cl. 260-475.00p.

Seale, Virgil L.; Moreland, Billy Ray; and De Shazo, James Derwin, to Nalco Chemical Company. Products of reaction of polyoxyalkylene alcohols and di-glycidyl ethers of bis-phenol compounds. 3,676,501, Cl. 260-613.00b.

Sealectro Corporation: *See*—
Stand, Mille, 3,676,638.

Seaview Enterprises, Inc.: *See*—
Allen, William J.; and Barber, Michael D., 3,675,923.

Seeger, Donald E.: *See*—
Beare, Gene K.; Kopelman, Bernard; and Seeger, Donald E., 3,676,663.

Seekircher, Richard: *See*—
Ellis, Alan F.; Kresge, Alfred N.; and Seekircher, Richard, 3,676,489.

Segerdahl, Roy R.; and Jonke, Joseph L., to Bunker-Ramo Corporation, The. Fluid-pressure transducer. 3,676,821, Cl. 338-41.

Seibold, Rudolf, to L. & C. Steinmuller G.m.b.H. Wall elements for steam generators. 3,675,628, Cl. 122-6.00r.

Sekmakas, Kazys, to DeSoto, Inc. Aminoplast resins particularly adapted for electrocoating and process for producing the same. 3,676,312, Cl. 204-181.000.

Self, Douglas R. Fluid pump. 3,676,019, Cl. 417-121.000.

Sellors, John, Jr.; and Shular, Howard E., to Pyronics Inc. Excess air burner. 3,676,048, Cl. 431-353.000.

Selman, Gordon Leslie, to Johnson, Matthey & Co., Limited. Improvement in the process relating to alloys containing platinum group metals. 3,676,114, Cl. 75-172.000.

Sels, Victor Richard, to De La Rue Instruments Limited. Article banding machines. 3,675,386, Cl. 53-63.000.

Seltzer, Clyde W.: *See*—
Summers, Stanely E.; and Seltzer, Clyde W., 3,675,282.

Seng Company, The: *See*—
Meinhardt, James R., 3,675,887.

Senrui, Shiro: *See*—
Takehisa, Masaaki; Senrui, Shiro; and Nakajima, Hayato, 3,676,419.

Senyard, Corley P.: *See*—
Winkler, John C.; and Senyard, Corley P., 3,676,412.

Severini, Febo; Valvassori, Alberto; and Tavazzani, Carlo, to Montecatini Edison S.p.A. Preparation of polymeric compositions of high anti-impact resistance. 3,676,528, Cl. 260-878.00r.

Shabarack, John: *See*—
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,676,088.

Shaffer, Howard A.: *See*—
Weaver, Galen K.; Shaffer, Howard A.; and Coughlin, Stephen A., 3,676,575.

Shaffer, William E., to Stromberg-Carlson Corporation. Pulsing circuit including a switching and current regulator circuit. 3,676,601, Cl. 179-16.00e.

Shakespeare of Arkansas, Inc.: *See*—
Sarah, Thomas F., 3,675,502.

Shami, Elie: *See*—
Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, 3,676,557.

Shamoo, Adil E. Liquid scintillators. 3,676,360, Cl. 252-301.20r.

Shane, Victor. Snap open bottle cap. 3,675,805, Cl. 215-42.000.

Shank, Charles Vernon: *See*—
Kogelnik, Herwig Werner; and Shank, Charles Vernon, 3,675,990.

Shannon, Charles N.: *See*—
Niemann, George W.; and Shannon, Charles N., 3,676,780.

Shanok, Jesse P.: *See*—
Shanok, Victor; and Shanok, Jesse P., 3,675,355.

Shanok, Victor; and Shanok, Jesse P., to Glass Laboratories Company. Molding strip. 3,675,355, Cl. 40-125.00r.

Shapiro, Stanley: *See*—
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,676,088.

Sharaf, Harold M.; and Eby, Richard L., to Anderson Power Products, Inc. Pulse sampling battery fuel gauging and resistance metering method and means. 3,676,770, Cl. 324-29.500.

Shariff, Sadig A.: *See*—
Wilson, John R.; and Shariff, Sadig A., 3,676,749.

Sharman, Samuel H., to Chevron Research Company. Hydrogenated olefin sulfonate-fatty acid amide detergent compositions. 3,676,372, Cl. 252-525.000.

Sharp Kabushiki Kaisha: *See*—
Sakurai, Takeshi; and Tani, Zenpei, 3,676,228.

Sharples, Allan; Rostron, Arthur John; and Mc Gibbon, Graeme, to Ilford Limited. Photosensitive devices incorporating polymeric elements which give high absolute photo-currents. 3,676,688, Cl. 250-211.00r.

Shattuck, Meredith David; and Weiche, William J., to International Business Machines Corporation. Process for making electrophotographic plates. 3,676,210, Cl. 117-201.000.

Shaver, William R.: *See*—
Nagy, Ernest J.; and Shaver, William R., 3,675,591.

Shaw, Richard G.: *See*—
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.

Shea, Edward M.: *See*—
Cooper, William W., IV; and Shea, Edward M., 3,676,193.

Sheahan, Desmond F.: *See*—
Orchard, Henry J.; and Sheahan, Desmond F., 3,676,806.

Sheldon, Edward Emanuel. Devices of fiberoptic and vacuum tube construction. 3,676,671, Cl. 250-71.00r.

Sheldon, Richard, to Litvak Meat Company Inc. Method for preparing beef feet products. 3,676,153, Cl. 99-107.000.

Shell Oil Company: *See*—
Babcock, Lyndon R., Jr.; and Walker, Dale A., 3,676,527.
Farmer, Robert F., III; and Lawson, Jimmie B., 3,675,716.
Fraser, John P.; and Hartman, David E., 3,676,091.
Mason, Ronald F., 3,676,523.

Shelley, Shelley W., to Shelley Systems, Inc. System for producing modular building blocks. 3,676,536, Cl. 264-33.000.

Shelley Systems, Inc.: *See*—

Shelley, Shelley W., 3,676,536.

Shen, Tsung-Ying; and Boswell, Kay H., to Merck & Co., Inc. 5'Adamantoyl-2'-deoxy-5-methylaminouridine. 3,676,422, Cl. 260-211.50r.

Sherrill, Henry H., Jr., to Western Electric Company, Incorporated. Article mounting apparatus. 3,675,299, Cl. 29-203.

Sherwood, Richard Curry: *See—*
Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, 3,676,867.

Shibayama, Daigoro; and Mashimo, Teruo, to Yamato Setubi Koji Kabushiki Kaisha. Apparatus for treating organic waste. 3,676,074, Cl. 23-259.100.

Shick, Philip E., to Owens-Illinois, Inc. Methods for the treatment of spent sulfite pulping liquors and the recovery of chemical pulping values therefrom. 3,676,064, Cl. 23-129.000.

Shiga, Yasuhiro: *See—*
Nishitani, Kazuo; Shiga, Yasuhiro; and Nishibayashi, Yoshifumi, 3,676,206.

Shimadzu Seisakusho, Ltd.: *See—*
Shimoi, Saburo, 3,676,018.

Shimizu, Tetsuji; and Iwakura, Makoto, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Electric circuit for rapidly igniting a discharge tube. 3,676,734, Cl. 315-200.000.

Shimoi, Saburo, to Shimadzu Seisakusho, Ltd. Pumping apparatus. 3,676,018, Cl. 417-72.000.

Shimotori, Kazumi: *See—*
Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, 3,676,110.

Shin, Masaaki: *See—*
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.

Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, to Takeda Chemical Industries, Ltd. Method for manufacturing activated carbon and apparatus therefor. 3,676,365, Cl. 252-422.000.

Shirasu, Kazuo: *See—*
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.

Shirokov, Grigory Ivanovich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.

Shively, Edgar E. Drive-in window unit. 3,675,599, Cl. 109-11.000.

Shore, Thomas H. Sound dispenser. 3,676,594, Cl. 179-1.0vl.

Showa Highpolymer Co., Ltd.: *See—*
Takiyama, Eiichiro; and Hokamura, Sadakazu, 3,676,524.

Shukshin, Nikolai Pavolich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Shular, Howard E.: *See—*
Sellors, John, Jr.; and Shular, Howard E., 3,676,048.

Shultz, John E.; and Herderhorst, Wilfred W., to Tokheim Corporation. Electrical in-tank fuel pump. 3,676,025, Cl. 417-423.000.

Shulzhenko, Alexandr Alexandrovich; and Getman, Anatoly Fedorovich, to Ordena Trudovogo Krasnogo Znameni Ukrainsky Nauchno-Issledovatelsky Konstruktorsky Teknnologichesky Institut Sinteticheskikh Sverkhtverdykh materialov i Instrumenta Gosplana Ukrainskoi SSR. Method for synthesizing diamond. 3,676,068, Cl. 23-209.100.

Shum, John, Jr., to Olin Corporation. Engine starting system with combination air relay and check valve. 3,675,417, Cl. 60-39.140.

Shumard, Raymond F.: *See—*
Galloway, Reginald B.; and Shumard, Raymond F., 3,676,547.

Shute, Adrian L. Spring-loaded folding arm. 3,675,885, Cl. 248-351.000.

Sibley, Richard D.: *See—*
Domyan, Frank F.; Lantz, Joseph C.; and Sibley, Richard D., 3,675,650.

Siddons, Phillip Thomas, to Glaxo Laboratories Limited. Recovery of pure cephalexin. 3,676,437, Cl. 260-243.00c.

Sieet, George E.: *See—*
Miller, Howard B.; and Sieet, George E., 3,675,332.

Sieg, Robert P., to Chevron Research Company. Disproportionation and isomerization for isopentane production. 3,676,522, Cl. 260-683.650.

Siemag Siegener Maschinenbau, G.m.b.H.: *See—*
Bretschneider, Erich, 3,675,455.

Siemens Aktiengesellschaft: *See—*
Albus, Peter, 3,676,126.
Bahr, Alex; and Peche, Gerhard, 3,676,743.
Bauer, Franz; Besemer, Karl Friedrich; and Kinner, Gotthard, 3,676,776.
Hini, Paul, 3,675,636.
Hofmann, Horst; and Katz, Helmut, 3,676,731.
Keller, Werner, 3,676,819.
Merkenschlager, Hans-Hermann, 3,675,318.
Ramisch, Emil, 3,676,757.
Tappeiner, Hermann, 3,676,763.

Sieurin, Donald, to Morgan Construction Company. Roll changing apparatus. 3,675,456, Cl. 72-239.000.

Sigl, Jon D. Ski with inclined boot platform. 3,675,938, Cl. 280-11.35c.

Signal-Stat Corporation, mesne: *See—*
Kaldor, Robert M.; Borruso, Joseph V.; and Goldbaum, Elliott, 3,676,834.

Signetics Corporation: *See—*
Russell, Lewis K.; and Banks, James L., 3,676,742.

Signode Corporation: *See—*
Lems, Peter, 3,675,388.
Melsek, Norbert J., 3,675,765.

Siksai, Anthony. Turn signal indicating system. 3,676,845, Cl. 340-87.000.

Silby, Harry, to Wire Sales Company. Treatment of waste sulfite liquor to avoid pollution, and method of making. 3,676,164, Cl. 106-77.

Silma: *See—*
Alfano, Marco, 3,675,873.

Silva, Ruben. Magnetic toy. 3,675,365, Cl. 46-239.000.

Silverman, Herbert P.; and Giarrusso, Gino A., to TRW Inc. Method for preparing sensors for detecting reducing vapors. 3,676,188, Cl. 08/24/70.

Silverstein, Joseph J., to Engine Power Corporation. Sealant for pneumatic tires. 3,676,381, Cl. 260-17.40r.

Silvestrov, Nikolai Demyanovich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.

Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich. Device for constructing mines. 3,675,433, Cl. 61-84.000.

Simmler, Walter: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.

Simmons, William J., to Communications Satellite Corporation. Electronically tunable matching circuit for circulators. 3,676,803, Cl. 333-1.100.

Simond, Jacques: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,676,496.

Simpson, David Cumming, to National Research Development Corporation. Gripping. 3,675,962, Cl. 294-99.00r.

Singer Company, The: *See—*
Hunts, Barney D.; and Lyon, William O., 3,675,624.

Singer Company, The, mesne: *See—*
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,675,711.
Ragen, Robert A., 3,676,658.
Rowe, John Joseph, 3,676,565.

Singh, Shobha; and Van Uitert, Legrand Gerard, to Bell Telephone Laboratories, incorporated. Nonlinear optical devices utilizing substantially hexagonal silicon carbide devices. 3,676,695, Cl. 307-88.300.

Singh, Sujan: *See—*
Arthur, Jett C., Jr.; and Singh, Sujan, 3,676,056.

Sinichkin, Moisei Mikhailovich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.

Sinnett, Homer Dayle: *See—*
Anderson, John E.; and Sinnett, Homer Dayle, 3,675,545.

Sittner, Weldon Rex, to Electro Medical Systems, Inc. Method and apparatus for high frequency electric surgery. 3,675,655, Cl. 128-303.140.

Sizer, Phillip S., to Otis Engineering Corporation. Well flow control system and method. 3,675,720, Cl. 166-314.000.

Sjonvall, Ragnar Edward: *See—*
Glasser, George; Sjonvall, Ragnar Edward; and Kaplow, Milton, 3,676,154.

Skagit Corporation: *See—*
Mangold, Edward J., 3,675,960.

SKF Industrial Trading and Development Company, N.V.: *See—*
Arsenius, Torsten Henry; and Hallstedt, Carl Goran Albin, 3,675,977.
Hallerback, Stig Lennart, 3,675,979.

Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., to Stanford Research Institute. 3,4,5-Trimethoxybenzamides of phenyl- and pyridylakylamines. 3,676,447, Cl. 260-295.0am.

Skogen, Robert O.: *See—*
Zetterlund, Stanley L.; and Skogen, Robert O., 3,675,587.

Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., to Allen-Bradley Company. Modular potentiometer. 3,676,822, Cl. 338-132.000.

Slater, Jack D.: *See—*
Nuscher, Edwin H.; and Slater, Jack D., 3,676,235.

Slater, William M.: *See—*
Stinton, Frederick M.; and Slater, William M., 3,676,031.

Slator, Damon T.; and Peil, Archie W., to Bowen Tools, Inc. Tubing hanger assembly and method of using same. 3,675,719, Cl. 166-297.000.

Sletzinger, Meyer: *See—*
Pines, Seemon H.; and Sletzinger, Meyer, 3,676,453.

Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., to Merck & Co., Inc. α-Acylhydrazino-π-phenyl-propionitriles. 3,676,480, Cl. 260-465.00d.

Sloane, Seymour D. Decorative tree covering for ornamenting an artificial tree. 3,676,275, Cl. 161-14.000.

Smierciak, Walter: *See—*
Kartasuk, Raymond H.; and Smierciak, Walter, 3,675,916.

Smith, Alan Ernest William: *See—*
Hare, George Anthony; and Smith, Alan Ernest William, 3,676,115.

Smith, Arthur A. Free flow water system for asphalt rollers. 3,675,546, Cl. 94-50.00r.

Smith, Dean A.: *See—*
Stewert, John F.; and Smith, Dean A., 3,675,347.

Smith, Frank; and Entwisle, John Hubert, to Imperial Chemical Industries Limited. Anode assembly for electrolytic cells. 3,676,325, Cl. 204-288.000.

Smith, George Elwood, to Bell Telephone Laboratories, Incorporated. Interconnection of electrical devices. 3,675,319, Cl. 29-625.000.

Smith International Incorporated: *See—*
Neilson, William J., 3,675,729.

Smith, James A., to Fibreboard Corporation, mesne. Tool for drawing the ends of opposed members together. 3,675,897, Cl. 254-78.000.

Smith, John H. Gravity overflow tube for automatic clothes washer. 3,675,448, Cl. 68-208.000.

Smith, John Paul: *See—*
Goldthorp, David Clayton; Limiero, Albert David; and Smith, John Paul, 3,676,608.

Smith Kline & French Laboratories: *See—*
Kaiser, Carl; and Zirkle, Charles L., 3,676,435.

Smith, Kline & French Laboratories, Inc.: *See—*
McGusty, Elizabeth R.; Sutton, Blaine M.; and Walz, Donald T., 3,676,554.

Smith, Leslie Harold, to Imperial Chemical Industries Limited. Alkanolamine derivatives. 3,676,493, Cl. 260-559.00a.

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Smith, Richard Daniel. Preserving cellulosic materials through treatment with alkylene oxides. 3,676,055, Cl. 8-120.000.

Smith, Richard Daniel. Treatment of cellulosic materials. 3,676,182, Cl. 117-60.000.

Smith, Robert T.: *See—*
Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., 3,675,927.

Smith, Ronald M.: *See—*
Collier, William W.; and Smith, Ronald M., 3,676,860.

Snam Progetti S.p.A.: *See—*
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,510.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,511.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,512.
Ciuti, Brunello; and Del Ross, Sergio, 3,676,357.

Snap-On Tools Corporation: *See—*
Knudsen, Ra-mond G.; Price, James W.; and Olson, Gene E., 3,675,516.

Snap-On-Tools Corporation: *See—*
Larson, Kenneth R., 3,675,464.

Snee, Charles Thomas, to Lubrizol Corporation, The. Phosphating solution with scale suppressing characteristics. 3,676,224, Cl. 148-6.15z.

Snell, Brian Kenneth; and Bishop, Nigel Douglas, to Imperial Chemical Industries Limited. Certain 2-formamido-4-hydroxypyrimidines. 3,676,443, Cl. 260-256.40c.

Snorkel Fire Equipment Company: *See—*
Davidson, Kenneth H.; and Morris, Carrol V., 3,675,721.

Snow, Robert C.: *See—*
Bourke, Edgar R., II; and Snow, Robert C., 3,675,816.

Sobel, Johannes: *See—*
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, 3,676,143.

Sobey, Albert J.; and Donlon, Richard H., to Transportation Technology, Inc. Speed and slip controlled traction drive. 3,675,583, Cl. 104-23.0fs.

Societe Anonyme dite Ameco S.A.: *See—*
Nass, Louis, 3,675,756.

Societe anonyme dite: L'Oreal: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, 3,676,546.

Societe Anonyme Francaise: *See—*
Moreau, Andre Jules Pierre, 3,675,574.

Societe Anonyme, Societe Minere et Metallurgique de Penanoya: *See—*
Bailly, Roger Gaston, 3,675,827.

Societe Ethylene Plastique: *See—*
Pied, Jean-Philippe, 3,676,395.

Societe Lannionnaise d'Electronique: *See—*
Tallegas, Francois, 3,676,855.

Societe Nationale des Petroles d'Aquitaine: *See—*
Bonzom, Albert; and Tramier, Bernard, 3,676,442.

Societe Nationale Industrielle Aerospatiale: *See—*
Dubernet, Robert; and Sabatie, Michele, 3,676,576.

Societe: Etablissements Davey Bickford Smith & Cie: *See—*
Moreau, Andre Jules Pierre, 3,675,574.

Soehngen, John W., to Celanese Corporation. Method of producing spray spun nonwoven sheets. 3,676,239, Cl. 156-16.00f.

Sokol David G.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.

Solartron Electronic Group Limited, The: *See—*
Conrad, John Harold; Reynolds, Anthony Edward St. Aubyn; and Gadd, Edward George, 3,676,707.

Solaux, Leon: *See—*
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, 3,676,390.

Solomito, Joseph T. Stone slotting machine. 3,675,972, Cl. 299-41.000.

Solomon, Nathan L. Magnetic tape spool and cartridge. 3,675,867, Cl. 242-55.19a.

Soloviev, Jury Filippovich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.

Solvay & Cie: *See—*
Boel, Michel; and Dechenne, Roger, 3,676,413.

Soma, Shinichi, to Kabushiki Kaisha Rinnai Seisakusho. Gas control valve means having a piezo-electric firing unit. 3,676,047, Cl. 431-255.000.

Somer, Toivo A., to Bendix Corporation. Low energy particle counter with two-dimensional position sensing. 3,676,676, Cl. 2650-83.00r.

Sommer, Gunter; and Sander, Hans Walter. Apparatus and method for differential thermal analysis. 3,675,465, Cl. 73-15.00b.

Sommerfeld, Eugene G. Polymeric dispersion of a diene-acrylonitrite graft copolymer with a different graft copolymer. 3,676,526, Cl. 260-876.00r.

Song, John, to American Cyanamid Company. 1,3,4-Thiadiazole-bridged thiomethylenephenol antioxidants. 3,676,449, Cl. 260-302.0sd.

Sonoyama, Heikitsu: *See—*
Wada, Hiroyuki; and Sonoyama, Heikitsu, 3,676,491.

Sony Corporation: *See—*
Machida, Tetsuo, 3,676,810.

Soref, Richard A., to Sperry Rand Corporation. Liquid crystal electro-optical measurement and display devices. 3,675,988, Cl. 350-160.000.

Sorenson, James L.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,675,891.

Sorrell, Stanley Edward, to Sterling Coated Materials Limited. Envelope with sealing means. 3,675,844, Cl. 229-80.000.

Southern California Gas Co.: *See—*
Osborne, Keith, 3,676,042.

Southern Research Institute: *See—*
Lacey, Robert E.; and Mintz, Milton S., 3,676,335.

Spanke, Edwin A.: *See—*
Carrier, Louis F.; and Spanke, Edwin A., 3,675,976.

Spearin, Walter E.; and Vanderhei, Harold S., to Combined Paper Mills, Inc. Method for controlling varying liquid penetration of a continuous paper web. 3,676,184, Cl. 117-68.000.

Spector, Herman. Coating and forming. 3,676,174, Cl. 117-26.000.

Spector, Walter: *See—*
Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, 3,676,557.

Speed, Sidney E., to Olin Corporation. Process for controlled production of hydrogen gas by the catalyzed and controlled decomposition of zirconium hydride and titanium hydride. 3,676,071, Cl. 23-212.00r.

Speelman, Irving A., to Propper Manufacturing Co., Inc. Instrument with replaceable tube. 3,675,486, Cl. 73-401.000.

Speller Frank N., Jr., to Clark, Forrester A. Processes for secondarily recovering oil. 3,675,715, Cl. 166-256.000.

Sperry Rand Corporation: *See—*
Best, Albert M.; and Anderson, Keith B., 3,675,802.
Davenport, Arthur B., 3,676,697.
McMahon, Donald H., 3,676,798.
O'Connor, Maurice J.; and Davidson, Donald J., 3,675,676.
Oliver, Kenneth L., 3,676,818.
Rafuse, Mary J., 3,675,987.
Soref, Richard A., 3,675,988.
Strenglein, Harry F., 3,676,865.
Weinstein, Warren D., 3,675,475.
Wesner, Charles R., 3,676,648.

Spiller, Lester L.; and Buford, Claude W., to Ransburg Electro-Coating Corporation. Polyvinyl chloride powder coatings. 3,676,171, Cl. 117-17.000.

Spivack, John D.; and Dexter, Martin, to Ciba-Geigy Corporation. Bis-(hindered phenol)-alkane phosphonates. 3,676,531, Cl. 260-953.000.

Spoel, Han: *See—*
Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, 3,676,105.

Sports Equipment, Inc.: *See—*
Meyers, Walter A., Sr., 3,675,921.

Sprague Electric Company: *See—*
Burger, Francis J. P. J.; and Wu, Jie Chu, 3,676,752.

Sprayon Research Corporation: *See—*
Kempthorne, Richard Lewis, 3,676,170.

Sprowl, James A. Voltage-time-voltage computation circuit using R-C exponential decay circuits to perform multiplication, division, root-finding and logarithmic conversion. 3,676,661, Cl. 235-193.000.

Spurlin, Harold M., to Hercules Incorporated. Azidoformate-isocyanate compounds. 3,676,466, Cl. 260-349.000.

Square D Company: *See—*
Wrabetz, Voyta E., 3,676,812.

Squibb, E. R., & Sons, Inc.: *See—*
Levine, Seymour D., 3,676,452.
Yale, Harry Louis; and Petigara, Ramesh, 3,676,445.

Stackpole Carbon Company: *See—*
Olson, David A., 3,676,825.

Staffin, Robert; Ricci, Roy J.; and Juels, Ronald J., to Procedyne Corporation. Particle analyzing apparatus and method. 3,676,647, Cl. 235-92.0pc.

Stahly, Eldon E.: *See—*
Frank, Victor S.; Stahly, Eldon E.; and Rice, Rip G., 3,676,311.

Stalego, Joseph P., to Owens-Corning Fiberglas Corporation. Process for producing air blown glass fiber strand mat. 3,676,095, Cl. 65-3.000.

Staley, A. E., Manufacturing Company: *See—*
Jones, Rexford W.; and Thompson, William B., 3,676,121.
Protzman, Thomas F.; and Magidson, William H., 3,676,127.
Protzman, Thomas F., 3,676,145.
Protzman, Thomas F., 3,676,146.

Stand, Mille, to Sealectro Corporation. Plasma spray device and method. 3,676,638, Cl. 219-121.00p.

Standard Oil Company: *See—*
Grutsch, James F.; and Mallatt, Russell C., 3,675,779.

Stanford Research Institute: *See—*
Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,676,447.

Stangarone, Gene; Cassara, Frank A.; and Dupont, Eugene F., to Automatic Flag Poles, Inc. Automatic flagpole. 3,675,615, Cl. 116-173.000.

Star-Kist Foods, Inc.: *See—*
Vidjak, Frank V., 3,675,273.

Starer, Robert L., to Physitech, Inc. Aircraft flasher unit. 3,676,736, Cl. 315-241.00r.

Stark, Gary K.: *See—*
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,675,900.

Starliper, Aaron G.: *See—*
Barnard, Paul G.; Starliper, Aaron G.; and Stephenson, James B., 3,676,107.

State of Nebraska: *See—*
Anderson, John E.; and Sinnett, Homer Dayle, 3,675,545.

Staten, Hi W.: *See—*
Arens, James L.; and Staten, Hi W., 3,676,653.

Statham Instruments, Inc.: *See—*
Funfstuck, Horst; and Elazar, Shmuel, 3,675,643.

Stearns, Richard S.; Duling, Irl N.; and Gates, David S., to Sun Oil Company. Synthetic lubricants from low molecular weight olefins. 3,676,521, Cl. 260-683.100.

Steed, Frank Streeton; deceased (by Rutherford, Robert Mark; and Steed, Mary Phyllis; executors); and Lawson-Tancred, Henry, to Thompson, Anthony Sigston. Parking apparatus with powered pallets in each parking stall. 3,675,799, Cl. 214-16.1cb.

Steed, Mary Phyllis: *See—*
Steed, Frank Streeton; and Lawson-Tancred, Henry, 3,675,799.

Steiman, Wolf, to Valve Corporation of America. Tilt action mixing dispenser valve. 3,675,823, Cl. 222-145.000.

Stein Industrie: *See—*
Vidal, Jean; and Lemoine, Jacques, 3,675,423.
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, 3,675,426.

Stein, James H.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.

Steiner, Josef; and Widmer, Adolf, to Sulzer Brothers Limited. Apparatus for mounting a harness in a weaving machine. 3,675,686, Cl. 139-1.000.

Stephanoff, Nicholas N., to Hewlett-Packard Company. Angular impact fluid energy mill. 3,675,858, Cl. 241-5.000.

Stephens, Erwin E. Earpiece for hearing aid having sound inlet for high frequencies. 3,676,611, Cl. 179-107.00e.

Stephens, Robert K., to Polaroid Corporation. Novel photographic products and processes. 3,676,123, Cl. 96-29.000.

Stephens, Ruth E., to Ethyl Corporation. Neodymium oxide-barium oxide catalyst composition. 3,676,370, Cl. 252-455.00r.

Stephenson, James B.: *See—*
Barnard, Paul G.; Starliper, Aaron G.; and Stephenson, James B., 3,676,107.

Stephenson, Robert L., to Allied Chemical Corporation. Seat belt buckle assembly. 3,675,281, Cl. 24-230.000.

Sterling Coated Materials Limited: *See—*
Sorrell, Stanley Edward, 3,675,844.

Sterling Drug Inc.: *See—*
Archer, Sydney; and Schulenberg, John W., 3,676,444.
Clinton, Raymond O., 3,676,426.

Sternberg, Hyman M.; Piacesi, Dante, Jr.; and Katz, Howard, to United States of America, Navy. Rod warhead. 3,675,577, Cl. 102-67.000.

Sterrett, Eugene L. Gas separating device. 3,675,394, Cl. 55-518.000.

Stevens, Robert Walter: *See—*
Coyle, Jan Robert; and Stevens, Robert Walter, 3,676,609.

Stevens, William D., to Foster Wheeler Corporation. Minimization of nitrogen oxides in combustion products. 3,675,629, Cl. 122-235.00r.

Stewart, John S., to Hawley Products Company. Padded panel for automobile door. 3,676,278, Cl. 161-43.000.

Stewert, John F.; and Smith, Dean A., to Westinghouse Air Brake Company. Ejector and floor actuating means for scraper. 3,675,347, Cl. 37-129.000.

Stieglitz, Henry Gilbert: *See—*
Hake, Walter Thomas; and Stieglitz, Henry Gilbert, 3,676,271.

Stiff, Bernard G. E.; and Finelli, Thomas M., to Avco Corporation. Bearing. 3,675,980, Cl. 308-238.000.

Stijger, Adrianus G., to Interlas N.V. Hoisting grab. 3,675,963, Cl. 294-104.000.

Stinton, Frederick M.; and Slater, William M., to Conenco International Limited. Post-tensioning system. 3,676,031, Cl. 425-111.000.

Stokes, Joseph F.; and Van Vessem, George E., to American Chain & Cable Company, Inc. Potentiometric resistance measuring system. 3,676,774, Cl. 324-57.000.

Stolarski, Boniface: *See—*
Le Brasse, Gordon J.; and Stolarski, Boniface, 3,676,103.

Stolpa, Gerhard, to Henkel & Cie, GmbH. Preparation of factice-like products. 3,676,468, Cl. 260-403.000.

Stolzfus, John E.: *See—*
Aikinson, James D.; Lepley, James W.; Nussbaum, Claire E.; and Stolzfus, John E., 3,675,796.

Stopera, Walter. Vehicle speed controlled throttle governor. 3,675,731, Cl. 180-109.000.

Storandt, Duane L. Dentifrice applicator. 3,675,264, Cl. 15-104.940.

Stork Amsterdam N.V.: *See—*
Vertegaal, Jacobus G., 3,675,571.

Story, Albert G., to Colorado State University Research Foundation. Method and apparatus for separating potatoes from stones and soil clods. 3,675,769, Cl. 209-73.000.

Story, Paul R.: *See—*
Murray, Robert W.; and Story, Paul R., 3,676,394.

Story, Richard-Neil; and Bundegaard, Howard, to American Cyanamid Company. Wet-spinning shaped fibers. 3,676,540, Cl. 264-177.00f.

Storyk, John M. Suspension system. 3,675,884, Cl. 248-317.000.

Strasser, Helmut: *See—*
Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, 3,676,759.

Stratton, Cleo C. Engine. 3,675,630, Cl. 123-70.00r.

Strauss, Rudolf Siegfried; and Teitz, Peter David, to Fry's Metals Limited. Soldering fluxes. 3,675,307, Cl. 29-495.000.

Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna. Fused salt electrolyzer for magnesium production. 3,676,323, Cl. 204-244.000.

Strenglein, Harry F., to Sperry Rand Corporation. High frequency signal memory and regenerator. 3,676,865, Cl. 340-173.0rc.

Strobl, Frederick P., Jr.: *See—*
Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., 3,675,770.

Strom, Thomas N.: *See—*
Ludwig, Lawrence P.; and Strom, Thomas N., 3,675,935.

Stromberg Datagraphix, Inc.: *See—*
Harkins, Patrick A., Jr., 3,676,317.

Stromberg-Carlson Corporation: *See—*
Budrys, Ignas; and Lee, Ernest O., Jr., 3,676,603.
Goetchius, Norman E.; and Zaky, Amin Y., 3,676,602.
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,676,607.
Jorgensen, Adam A.; Bentley, William; and Urycki, Edward, 3,676,747.
Shaffer, William E., 3,676,601.

Strother, Seldon D. Shelf container for film strip. 3,675,982, Cl. 312-278.000.

Struthers Scientific and International Corporation: *See—*
Ganiaris, Neophytos, 3,675,436.

Sturdy, Clifford, to Davy and United Engineering Company Limited. Ingot manipulator for a rolling mill. 3,675,789, Cl. 214-1.0qg.

Sullifoam, Inc.: *See—*
Sullivan, Matthew A., 3,675,595.

Sullivan, Matthew A., to Sullifoam, Inc. Pallet. 3,675,595, Cl. 108-51.000.

Sulzer Brothers Limited: *See—*
Steiner, Josef; and Widmer, Adolf, 3,675,686.

Sumitomo Chemical Company, Ltd.: *See—*
Hirohashi, Toshiyuki; Izumi, Takahiro; and Yamamoto, Hisao, 3,676,460.

Summerfield, William F., to Mattel, Inc. Strip record for a phonograph. 3,675,930, Cl. 274-11.00r.

Summers, Stanely E.; and Seltzer, Clyde W., to Ametek, Inc. Mechanical fuse. 3,675,282, Cl. 24-230.0sl.

Sun Oil Company: *See—*
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,676,521.

Sun Research and Development Co.: *See—*
Raymond, Richard L., 3,676,299.

Sunbeam Corporation: *See—*
Bluestein, Bernard B., 3,675,449.

Super Caster Corporation: *See—*
Closa, Jose, 3,675,269.

Susquehanna Corporation, The: *See—*
Perri, Joseph, 3,675,304.

Suter, Charles A., to Goodyear Tire & Rubber Company, The. Inflatable-deflatable flexible structural component. 3,675,377, Cl. 52-2.000.

Sutton, Blaine M.: *See*—
McGusty, Elizabeth R.; Sutton, Blaine M.; and Walz, Donald T., 3,676,554.

Suzuki, Osamu: *See*—
Akashi, Goro; Suzuki, Osamu; and Nakamura, Matsuaki, 3,676,217.

Suzuki Takashi: *See*—
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.

Svenska Cellulosa Aktiebolaget: *See*—
Andersson, Per-Erik; and Bergholm, Carl Arne, 3,675,707.

Svoboda, Glenn R.; and Reineck, Ronald W., to Freeman Chemical Corporation. Low flame spread polyurethane foam containing bromine-containing polyester resin. 3,676,376, Cl. 260-2.5av.

Swanson, Rollin J. Atmospheric water collector. 3,675,442, Cl. 62-285.000.

Swartz, William M. Method for applying letters to plaques and the like. 3,676,248, Cl. 156-235.000.

Sweeney, William M.; and Alexander, David Lee, to Texaco Inc. Process for transportation of waxy crude oils. 3,675,671, Cl. 137-13.000.

Swet, Charles J., to United States of America, Navy. Optical scanning spacecraft system. 3,676,581, Cl. 178-5.40r.

Swiatosz, Edmund; and Chambers, Walter S., to United States of America, Navy. Fire fighting and control similator. 3,675,343, Cl. 35-10.000.

Sylvania Electric Products, Inc.: *See*—
Anderson, John Wallace; and Loughridge, Frederick Ardel, 3,676,043.
Beare, Gene K.; Kopelman, Bernard; and Seeger, Donald E., 3,676,663.
Cheney, Richard F.; and Parsons, Donald S., 3,676,083.
Dale, Ernest A.; and Thomas, Martha J. B., 3,676,358.
Hammond, Michael J.; and Haynes, James W., 3,676,177.
Loughridge, Frederick A.; Matheson, Wilfrid G.; and Passmore, Edmund M., 3,676,730.
Menelly, Richard A., 3,676,729.
Roche, William J., 3,676,735.
Schreurs, Willy P.; and Kimball, Lawrence W., 3,676,176.
Schreurs, Willy P., 3,676,728.
Thompson, David F., 3,676,569.

Symm, Richard H., to Dow Chemical Company, The. Process for flameproofing cellulosic textile fabrics and product obtained thereby. 3,676,054, Cl. 8-116.200.

Syverson, Charles D., to Kohler Co. Brushless alternating current generator. 3,676,764, Cl. 322-51.000.

Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Rokuro. Production of fresh water, brine and magnesium hydroxide. 3,676,067, Cl. 23-204.00r.

Tabata, Norimasa: *See*—
Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Rokuro, 3,676,067.

Tabler, Donald C.: *See*—
Johnson, Marvin M.; and Tabler, Donald C., 3,676,332.

Tabler, Donald C., to Phillips Petroleum Company. Hydrocarbon dehydrogenation employing metal antimonide catalysts. 3,676,513, Cl. 260-668.00d.

Taga, Koji; and Noguchi, Masahiko, to Konoshima Chemical Co., Ltd. Manufacturing method for high purity synthetic cryolite from crude wet process phosphoric acid. 3,676,061, Cl. 23-88.000.

Taga, Koji; and Noguchi, Masahiko, to Konoshima Chemical Co., Ltd. Manufacturing method for pure synthetic cryolite. 3,676,062, Cl. 23-88.000.

Taguchi, Naoyoshi. Gas detecting element and method of manufacturing same. 3,676,820, Cl. 338-34.000.

Takahashi, Kuniyuki; Hata, Go; and Miyake, Akihisa, to Toray Industries, Inc. 1,6-Octadiene derivatives and the preparation thereof. 3,676,470, Cl. 260-410.000.

Takahashi, Naoki, to Nittan Company Limited. Single chamber ionization smoke detector. 3,676,678, Cl. 250-83.6ft.

Takashima, Kunihide: *See*—
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.

Takata, Toshihiko: *See*—
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.

Takayanagi, Eifu: *See*—
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.

Takeda Chemical Industries, Ltd.: *See*—
Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, 3,676,402.
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.

Takehisa, Masaaki; Senrui, Shiro; and Nakajima, Hayato, to Japan Atomic Energy Research Institute. Process for producing fine polyethylene powder. 3,676,419, Cl. 260-94.90f.

Takekawa, Toshio, to Tokekawa Tekko Kabushiki Kaisha. Hydraulic transmission mechanism for heavy rolling stocks and the like. 3,675,507, Cl. 74-687.000.

Takemasa, Kazuo; and Komada, Hitoshi, to Sanyo Electric Co., Ltd. Refrigerator with fluid amplifier means. 3,675,438, Cl. 62-156.000.

Takezawa, Isoe; Muto, Masataro; and Hori, Koichi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of constructing marine float structures. 3,675,606, Cl. 114-65.00r.

Taki, Hiromitsu; Hayakawa, Shigeru; and Nagase, Kaneomi, to Matsushita Electric Industrial Co., Ltd. Ceramic dielectric comprising calcium titanosilicate. 3,676,351, Cl. 252-63.500.

Takiyama, Eiichiro; and Hokamura, Sadakazu, to Showa Highpolymer Co., Ltd. Vinyl ester resins prepared with an addition compound of a secondary amine-acid salt catalyst. 3,676,524, Cl. 260-837.00r.

Tallarico, Robert A.; and Goff, Don L. Suspendible sleeping cocoon. 3,675,256, Cl. 5-120.000.

Tallegas, Francois, to C.I.T.-Compagnie Industrielle des Telecommunications and Societe Lannionnaise d'Electronique. Connecting network arrangement for time switching. 3,676,855, Cl. 340-172.500.

Tanabe Kakoki Co., Ltd.: *See*—
Fujiwara, Yoshiyuki, 3,676,564.

Tanaka, Osamu: *See*—
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.

Tanaka, Yoshimasa: *See*—
Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, 3,675,324.

Tani, Zenpei: *See*—
Sakurai, Takeshi; and Tani, Zenpei, 3,676,228.

Tanimura, Hiroshi: *See*—
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.

Taormina, Anthony J.: *See*—
Hartz, Marvin E.; Taormina, Anthony J.; and Grebik, Stephen J., 3,676,838.

Tappeiner, Hermann, to Siemens Aktiengesellschaft. Self-commutating direct-to-alternating current inverter. 3,676,763, Cl. 321-45.00c.

Tarrant, Fred K.: *See*—
Murray, Gregory J.; and Tarrant, Fred K., 3,675,266.

Tarrant Manufacturing Company: *See*—
Murray, Gregory J.; and Tarrant, Fred K., 3,675,266.

Tashiro, Kijuro; and Yokoyama, Masuzo, to Mitsubishi Petrochemical Co., Ltd. Catalytic production of olefin polymers. 3,676,418, Cl. 260-88.200.

Tatakin, Alexandr Nikolaevich: *See*—
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Tatsutomi, Yasuo; and Noma, Tetsuo, to Toyo Kogyo Co., Ltd. Device for containing and subsequently consuming the fuel vapors escaping to the atmosphere for an internal combustion engine. 3,675,634, Cl. 123-136.000.

Taube, Donald R.: *See*—
Reust, Paul H.; and Taube, Donald R., 3,675,300.

Tavazzani, Carlo: *See*—
Severini, Febo; Valvassori, Alberto; and Tavazzani, Carlo, 3,676,528.

Taylor, Glenn N., to Kendall Company, The. Catheter with valved fluid reservoir. 3,675,658, Cl. 128-349.0bv.

Taylor, Jerry H.: *See*—
Gosnell, Earl J.; and Taylor, Jerry H., 3,675,572.

Taylor, Lewis A., to Enterprise Machine and Development Corporation. Yarn handling apparatus. 3,675,623, Cl. 118-423.000.

Taylor, Monroe F., to Grace, W. R., & Co. Sleeve wrapped package with a base. 3,675,767, Cl. 206-65.00s.

TeBe Elprodukter AB: *See*—
Bengtsson, Bigge, 3,675,250.

Tee-Pak, Inc.: *See*—
Turbak, Albin F.; and Rose, Henry J., 3,676,382.

Teitz, Peter David: *See*—
Strauss, Rudolf Siegfried; and Teitz, Peter David, 3,675,307.

Tejera, Luis H., to Mallinckrodt Chemical Works, mesne. Measuring syringe. 3,675,492, Cl. 73-425.600.

Tektronix, Inc.: *See*—
Boer, Machiel, 3,676,807.
Charters, Thomas H., 3,676,777.

Teledyne, Inc.: *See*—
Kennedy, George C., 3,676,069.

Teledyne Ryan Aeronautical Company: *See*—
Girard, Peter F.; and Peterson, John M., 3,675,582.

Telephonic Equipment Corporation: *See*—
Johnson, James W., 3,676,605.

Tennessee Valley Authority: *See*—
Nix, Fred D., 3,676,101.

Tension Structures Inc.: *See*—
Moss, Charles W., 3,675,380.

Terrasse, Gilles: *See*—
Morane, Bruno; Paoletti, Charles; and Terrasse, Gilles, 3,675,821.

Terry, Alton L.: *See*—
Lentz, Tommy L.; and Terry, Alton L., 3,675,369.

Terry, David W., to International Business Machines Corporation. System for controlling format. 3,676,853, Cl. 340-172.500.

Texaco Inc.: *See—*
Morris, Herbert C.; and Dorn, Peter, 3,676,089.
Sweeney, William M.; and Alexander, David Lee, 3,675,671.
Texas Instruments, Incorporated: *See—*
Kourtesis, John G.; and Marcoux, Leo, 3,676,211.
Textron Inc.: *See—*
McCullough, Stuart, 3,675,519.
Rieth, Kurt A., 3,675,284.
Vannest, James L., 3,675,292.
Thamm, Rudolf: *See—*
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., 3,676,294.
Theodore, Roy: *See—*
Evans, David Maurice; and Theodore, Roy, 3,676,629.
Therm-O-Disc, Incorporated: *See—*
Bletz, Howard W., 3,676,817.
Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef, 3,675,581.
Thiel, Hans-Dieter: *See—*
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.
Thiemann, Josef; Murthy, Yelahanka K. S.; and Coronelli, Carolina, to Lepetit S.p.A. Antibiotic. 3,676,490, Cl. 260-534.000.
Thomas, Alfred William, to Massey-Ferguson Services NV. Sliding shaft power take off speed change. 3,675,497, Cl. 74-15.400.
Thomas, Dalton A. Connector between transmission actuating shaft and arm therefor. 3,675,956, Cl. 287-53.00r.
Thomas, Martha J. B.: *See—*
Dale, Ernest A.; and Thomas, Martha J. B., 3,676,358.
Thomas, Merritt H. Nail inserting device. 3,675,839, Cl. 227-140.000.
Thomas, Thomas R.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.
Thompson, Anthony Sigston: *See—*
Steed, Frank Streeton; and Lawson-Tancred, Henry, 3,675,799.
Thompson, David F., to Sylvania Electric Products Inc. Integrated circuit package. 3,676,569, Cl. 174-52.00s.
Thompson, George L. Retrievable density control valve. 3,675,714, Cl. 166-224.000.
Thompson, James C.: *See—*
Bailey, Loren C., 3,675,735.
Thompson, John T.: *See—*
Gillemot, George W.; and Thompson, John T., 3,676,836.
Thompson, Tom H. Disc brake caliper assembly. 3,675,742, Cl. 188-72.500.
Thompson, Tom H. Hydraulic disc brake construction. 3,675,743, Cl. 188-72.500.
Thompson, William B.: *See—*
Jones, Rexford W.; and Thompson, William B., 3,676,121.
Thomson-CSF: *See—*
Guenard, Pierre, 3,676,791.
Thorn Electrical Components Limited: *See—*
Williams, David Christopher Robert, 3,675,344.
Throckmorton, Morford C.; and Saitman, William M., to Goodyear Tire & Rubber Company, The. Diolefins ternary catalyst systems for the polymerization of conjugated. 3,676,411, Cl. 260-82.100.
Thuillier, Yvonne, to Laboratories Albert Rolland. Process for obtaining extracts from animal tissues. 3,676,551, Cl. 424-103.000.
Tights, Inc.: *See—*
Ferrell, John O., 3,675,247.
Timken Company, The: *See—*
McKelvey, Ralph E., 3,675,978.
Tisdale, Lucien E., to Ridge Ply, Inc. Machine for making stress laminated panel. 3,676,263, Cl. 156-462.000.
Tizard, Kenneth Wilfrid: *See—*
Basham, Edgar William James; and Tizard, Kenneth Wilfrid, 3,675,649.
Tokekawa Tekko Kabushiki Kaisha: *See—*
Takekawa, Toshio, 3,675,507.
Tokheim Corporation: *See—*
Shultz, John E.; and Herderhorst, Wilfred W., 3,676,025.
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, to Mitsubishi Rayon Company Limited and Mitsubishi Acetate Company Limited. Process of making a tobacco smoke filter from a split film of cellulose acetate. 3,675,541, Cl. 93-1.00c.
Tokyo Cloth Co., Ltd.: *See—*
Nishitani, Kazuo; Shiga, Yasuhiro; and Nishibayashi, Yoshifumi, 3,676,206.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, 3,676,110.
Yasuda, Atsuhiro; and Kobayashi, Koichi, 3,675,496.
Tomiyama, Eijiro, to Tomy Kogyo Co., Ltd. Remotely controllable toy transporter for vehicles. 3,675,366, Cl. 46-244.00a.
Tomkinson, John G.: *See—*
Ryan, John W.; Tomkinson, John G.; and Wieman, Paul R., 3,675,925.
Tomy Kogyo Co., Ltd.: *See—*
Tomiyama, Eijiro, 3,675,366.
Tonne, Franz; Brand, Werner; and Wolowitz, Benno, to Waggonfabrik Verdingen A.G. Stairway for rail-mounted conveyances. 3,675,593, Cl. 105-447.000.
Toray Industries, Inc.: *See—*
Takahashi, Kuniyuki; Hata, Go; and Miyake, Akihisa, 3,676,470.
Torge, Reimund: *See—*
Prugger, Hans; and Torge, Reimund, 3,676,004.
Torigoe, Yasuhiro. Method of manufacturing bags. 3,675,542, Cl. 93-35.00r.
Torii, Michihiro: *See—*
Kobayashi, Seihin; and Torii, Michihiro, 3,676,748.
Torin Corporation: *See—*
Cavagnero, Erman V.; and Loftus, Joseph F., 3,675,460.
Tosin, Peter M.: *See—*
Leu, Francois J.; Tosin, Peter M.; and Werner, Ernst, 3,676,696.
Towell, Le Roy Dean, to Computer Industries, Inc. Wire cutting apparatus for reflow wiring machines. 3,675,840, Cl. 228-4.000.
Toyo Kogyo Co., Ltd.: *See—*
Tatsutomi, Yasuo; and Noma, Tetsuo, 3,675,634.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.
Traber, Walter; Margot, Alfred; and Gailay, Jean-Jacques, to Geigy Chemical Corporation. Anthelmintic compositions containing new carbamates and thiocarbamates and method of use. 3,676,561, Cl. 424-300.000.
Tramier, Bernard: *See—*
Bonzom, Albert; and Tramier, Bernard, 3,676,442.
Trans-Sonics, Inc.: *See—*
Westcott, Vernon C., 3,676,765.
Transportation Technology, Inc.: *See—*
Sobey, Albert J.; and Donlon, Richard H., 3,675,583.
Trautman, George H., Jr.: *See—*
Munschauer, Frederick E., Jr.; and Trautman, George H., Jr., 3,675,463.
Traweek, John C. Electronic assembly utilizing thermal panel for heat sink. 3,676,745, Cl. 317-100.000
Trieschmann, Hans-Georg: *See—*
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.
Trimble, Cebern B. Heat exchange container. 3,675,637, Cl. 126-263.000.
Trip-Lite Limited: *See—*
Cooke, Albert Edward, 3,675,446.
Tronser, Alfred. Process of manufacturing a trimmer capacitor. 3,675,288, Cl. 29-15.410.
True Temper Corporation: *See—*
Jackson, Carl Thomas, 3,676,258.
Truesdell, Merlyn R.: *See—*
Merfeld, Michael J.; and Truesdell, Merlyn R., 3,675,851.
Trunzo, Floyd F.; and Scheidmantel, David A., to Westinghouse Electric Corporation. High temperature adhesive overcoat for magnet wire. 3,676,814, Cl. 336-205.000.
Truskolaski, Bernard S., to Minnesota Mining and Manufacturing Company. Decorative bow and method of making same. 3,676,277, Cl. 161-9.000.
TRW Inc.: *See—*
Blazek, William S., 3,675,708.
Drutchas, Gilbert H.; and Clark, Hubert M., 3,675,422.
Lake, Donald; Perrin, Badger; and Nolan, Frederick J., 3,675,817.
Rice, Edward J., 3,676,230.
Silverman, Herbert P.; and Giarrusso, Gino A., 3,676,188.
TRW Inc., mesne: *See—*
Duffy, William B., 3,675,958.
Mitchell, Edward B., 3,676,626.
Tsai, James H.; and Anderson, Glenn H., to Dow Chemical Company, The. Multinuclear π-complexes having at least two metal-cobalt bonds. 3,676,474, Cl. 260-429.
Tscharner, Christopher Johannes, to Geigy Chemical Corporation. Substituted bis-triazinylamino stilbene compounds and compositions thereof. 3,676,339, Cl. 252-8.750.
Tsuji, Masaru: *See—*
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.
Tsuji, Nobuo: *See—*
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.
Tsukuma, Shin; and Higuchi, Akio. Device for controlling yarn winding pressure on a package. 3,675,862, Cl. 242-18.00r.
Tuley, Donald L.: *See—*
Fellwock, Charles G.; and Tuley, Donald L., 3,675,271.
Tupper, Willis E.; and Hanson, John R., to Dexter Automatic Products Co., Inc. Primer pump. 3,676,026, Cl. 417-560.000.
Turbak, Albin F.; and Rose, Henry J., to Tee-Pak, Inc. Adhesive for regenerated cellulose. 3,676,382, Cl. 260-18.0tn.
Turley, Richard J., to Olin Corporation. Alpha-(dialkoxyphosphinyl)aryl methyl dialkylphosphates. 3,676,532, Cl. 260-970.000.
Turner, Ian, to International Computers Limited. Fluid supported pad with means to produce contact between head and record medium. 3,676,874, Cl. 340-174.10e.
Turner, Paul Anthony: *See—*
English, Alan Taylour; and Turner, Paul Anthony, 3,676,214.
Tyler, Derek E.: *See—*
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,676,088.
Uchida, Kozo, to Iwasaki Tsushinki Kabushiki Kaisha; a/k/a and Iwatsu Electric Co., Ltd. Pulse generator for fast rise-time pulses. 3,676,708, Cl. 307-263.000.
Uchida, Naotake: *See—*

Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.
Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Photographing system for use with a flash device. 3,675,547, Cl. 95-10.0ct.
Udylite Corporation: *See—*
Brown, Henry, 3,676,308.
Ueno, Keisiro: *See—*
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.
Ugine Kuhlmann: *See—*
Isard, Arsene; and Weiss, Francis, 3,676,465.
Vuillemenot, Jacques, 3,676,355.
Uhlig, Fritz; and Braun, Jurgen, to Kalle Aktiengesellschaft. Copying material and process for the preparation of auxiliary copies for multicolor printing. 3,676,134, Cl. 96-49.000.
Uline, Lawrence James, to Union Carbide Corporation. Machine for filling preformed pouches. 3,675,389, Cl. 53-183.000.
Ulrich, Henri: *See—*
Rao, Durvasula V.; Sayigh, Adnan A. R.; and Ulrich, Henri, 3,676,436.
Recchia, Frank P.; and Ulrich, Henri, 3,676,497.
Unick, Alvin J.; and Gault, Kenneth W., to Ethyl Corporation. Lubricant compositions. 3,676,348, Cl. 252-54.000.
Unidynamics/Phoenix, Inc.: *See—*
Huber, John F., 3,675,942.
Union Camp Corporation: *See—*
Abrams, Andrew M., 3,675,345.
Union Carbide Corporation: *See—*
Atwood, Lamar T.; and Gidge, Lester, 3,675,285.
Jackson, George E., 3,675,447.
Marshall, Walter R., 3,675,902.
Maurer, David Paul, 3,675,439.
Uline, Lawrence James, 3,675,389.
Uniroyal Englebert France S.A.: *See—*
Leblond, Jean, 3,676,262.
United Aircraft Corporation: *See—*
Evans, Dennis J.; and Elam, Richard C., 3,676,085.
Grosh, James L., 3,676,246.
Kovacs, Mark A., 3,676,797.
Lenkeit, Carl Heinz; and Conklin, Cornelius Stephen, Jr., 3,675,418.
Owczarski, William A.; Oblak, John M.; and Paulonis, Daniel F., 3,676,225.
Scannell, Paul R.; La Force, Phil D.; and O'Connell, Wayne T., 3,675,425.
United Control Corporation: *See—*
Asmussen, Daniel R., 3,676,659.
United Gas Industries Limited: *See—*
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, 3,676,876.
United Kingdom Atomic Energy Authority: *See—*
Linning, David Lees; and Cowking, Charles Brian, 3,676,296.
Rennie, Compton Alexander; Lockett, George Edward; and Hosegood, Samuel Brittan, 3,676,297.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Palfreyman, Jack; and Middleton, Henry Edward, 3,675,294.
United States of America
Agriculture: *See—*
Arthur, Jett C., Jr.; and Singh, Sujan, 3,676,056.
Harper, Robert J., Jr.; Bruno, Joseph S.; and Gautreaux, Gloria A., 3,676,052.
Lofton, John T.; Harper, Robert J., Jr.; and Blanchard, Eugene J., 3,676,207.
Army: *See—*
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, 3,675,327.
Matulis, Albert J., 3,676,274.
Army, mesne: *See—*
Dawson, Ralph E.; and Mahaffey, Donald M., 3,676,425.
Atomic Energy Commission: *See—*
Condas, George A.; and Brown, Don W., 3,676,677.
Irvine, Alvin R., 3,675,746.
Interior: *See—*
Barnard, Paul G.; Starliper, Aaron G.; and Stephenson, James B., 3,676,107.
Lacey, Robert E.; and Mintz, Milton S., 3,676,335.
Sachs, Samuel B.; and Riley, Robert L., 3,676,203.
Schwaneke, Alfred E.; Falke, Wilbert L.; and Crosser, Orrin K., 3,675,310.
National Aeronautics and Space Administration: *See—*
Arias, Alan, 3,675,910.
Belew, Robert R., 3,675,376.
Lee, Robert D., 3,676,772.
Ludwig, Lawrence P.; and Strom, Thomas N., 3,675,935.
Maserjian, Joseph; and Gatewood, John R., 3,676,754.
Miller, Howard B.; and Sieet, George E., 3,675,332.
Quatinetz Max; Weeton, John W.; and Herbell, Thomas P., 3,676,084.
Zaviantseff, Vladimir T., 3,676,674.
National Aeronautics and Space Administration; Administrator, with respect to an invention of:
Clauss, Robert; and Quinn, Rex B., 3,676,787.
Moser, Billy G.; and Landel, Robert F., 3,675,712.
Ramey, Robert L.; Landes, Hugh S.; and Manus, Eugene A. Thin film microwave iris. 3,676,809, Cl. 333-98.00r.
Navy: *See—*
Adair, Robert S., 3,675,549.
Bailey, Robert A.; and Michelsen, Arve, 3,675,575.
Brown, Bruce J., 3,676,793.
Garrett, William D.; and Barger, William R., Jr., 3,676,359.
Hanrahan, Donald J., 3,676,716.
Min, Sherman L., 3,675,579.
Murphree, Francis J.; and Catano, Paul S., 3,676,802.
Newton, Victor S., 3,676,792.
Niemann, George W.; and Shannon, Charles N., 3,676,780.
Sternberg, Hyman M.; Piacesi, Dante, Jr.; and Katz, Howard, 3,675,577.
Swet, Charles J., 3,676,581.
Swiatosz, Edmund; and Chambers, Walter S., 3,675,343.
Warren, Samuel C., 3,676,699.
Wolff, Hanns H., 3,675,342.
United States Surgical Corporation: *See—*
Bryan, Graham W.; and Green, David T., 3,675,688.
Uno, Yoshihiro, to Matsushita Electric Industrial Company. Thin-window image pick-up and recording tube. 3,676,586, Cl. 178-7.200.
Unterstenhofer, Gunter: *See—*
Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, 3,676,555.
Upadhyay, Pravin M., to Bell and Howell Company. Chain driven indexing Geneva mechanism. 3,675,503, Cl. 74-436.000.
Upjohn Company, The: *See—*
Doering, William Von E.; Farrissey, William J., Jr.; and Frulla, Floro F., 3,676,503.
Hester, Jackson B., Jr., 3,676,558.
McLaughlin, Alexander; and Rose, James S., 3,676,380.
Parikh, Jekishan R., 3,676,433.
Rao, Durvasula V.; Sayigh, Adnan A. R.; and Ulrich, Henri, 3,676,436.
Recchia, Frank P.; and Ulrich, Henri, 3,676,497.
Visser, Jeronimo, 3,676,302.
Urban, Era E. Seed planter with replaceable rotary trap chamber. 3,675,818, Cl. 221-224.000.
Urry, Wilbert H.; and Niu, Hsien Ying, to Wyandotte Chemicals Corporation. Process for the preparation of halogenated esters. 3,676,469, Cl. 260-408.000.
Urycki, Edward: *See—*
Jorgensen, Adam A.; Bentley, William; and Urycki, Edward, 3,676,747.
U.S. Industries, Inc.: *See—*
Carrier, Louis F.; and Spanke, Edwin A., 3,675,976.
U.S. Philips Corporation: *See—*
De Boer, Eeltje, 3,676,657.
Ducamus, Jean Matital; and Fernandez, Claude-Jane, 3,676,709.
Eulenberg, Hannspeter; and Van Veldhoven, Gerardus Antonius Wilhelmus, 3,676,733.
Glaise, Rene, 3,676,755.
Heetman, Alphonsus, 3,676,599.
Kasperkovitz, Wolfdietrich Georg, 3,676,701.
Van Der Woerd, Albertus Cornelis, 3,675,529.
Velzel, Christiaan Hendrik Frans, 3,676,006.
Wensink, Bernardus Leonardus; and Cense, Adriaan, 3,676,714.
Willems, Leonardus Franciskus, 3,676,596.
Vaccaro, Angelo; and Dixon, Harold F. E., to Columbia Controls Research Corporation. Coded document and system for automatically reading same. 3,676,644, Cl. 235-61.11d.
Vaillant, Joh., KG: *See—*
Mobus, Gunter, 3,676,041.
Vajna, Eugenio: *See—*
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,510.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,511.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,512.
Valjoux S.A.: *See—*
Mouquin, Paul-Louis, 3,675,412.
Valvassori, Alberto: *See—*
Severini, Febo; Valvassori, Alberto; and Tavazzani, Carlo, 3,676,528.
Valve Corporation of America: *See—*
Steiman, Wolf, 3,675,823.
Van Besauw, Jan Frans: *See—*
Poot, Albert Lucien; Van Besauw, Jan Frans; and Depoorter, Henri, 3,676,133.
Van Dale Corporation: *See—*
Buschbom, Floyd E.; Hansen, Glen D.; and Johnson, Roger L., 3,675,758.
Van Den Heuvel, Anthony P.; Richter, Ronald W.; and Joshi, Shrinivas G., to IIT Research Institute. Composite surface-wave transducer. 3,676,721, Cl. 310-8.300.
Van Der Ryn, Sim: *See—*
Hirshen, Sanford; and Van Der Ryn, Sim, 3,676,276.
Van Der Woerd, Albertus Cornelis, to U.S. Philips Corporation. Electromechanical transducer for tuning individual strings of a musical instrument. 3,675,529, Cl. 84-455.000.
Van Dorn Company: *See—*
Placek, Eugene W., 3,675,905.
Van Laethem, Robert: *See—*

Plumat, Emile; and Van Laethem, Robert, 3,676,097.
Van Uitert, Legrand Gerard: *See*—
Singh, Shobha; and Van Uitert, Legrand Gerard, 3,676,695.
Van Veelen, George Frans: *See*—
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, 3,676,143.
Van Veldhoven, Gerardus Antonius Wilhelmus: *See*—.
Eulenberg, Hannspeter; and Van Veldhoven, Gerardus Antonius Wilhelmus, 3,676,733.
Van Vessem, George E.: *See*—
Stokes, Joseph F.; and Van Vessem, George E., 3,676,774.
Van Wagner, Edward M.: *See*—
Mott, George R.; and Van Wagner, Edward M., 3,676,118.
Vanderhei, Harold S.: *See*—
Spearin, Walter E.; and Vanderhei, Harold S., 3,676,184.
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., to Phillips Petroleum Company. Manufacture of carbon black. 3,676,070, Cl. 23-209.400.
Vandervelden, Cornelius Keith, to Litton Medical Products, Inc. Dental X-ray head. 3,676,683, Cl. 250-90.000.
Vannest, James L., to Textron Inc. Method for making a roller bearing retainer. 3,675,292, Cl. 29-148.40c.
Varner, Lawrence P.: *See*—
Hicks, David G.; and Varner, Lawrence P., 3,675,493.
Vazirani, Hargovind Nihchaldas, to Bell Telephone Laboratories, Incorporated. Process for the surface treatment of titanium and its alloys. 3,676,223, Cl. 148-6.15r.
VCA Corporation: *See*—
Beres, Steven W., 3,675,831.
Veeder Industries Inc.: *See*—
Devanney, Raymond H., 3,675,848.
Veltjens, Dieter, to Schloemann Aktiengesellschaft. Hydraulic section-stretching machine. 3,675,458, Cl. 72-294.000.
Velzel, Christiaan Hendrik Frans, to U.S. Philips Corporation. Method of measuring the roughness of a surface. 3,676,006, Cl. 356-109.000.
Venable, Charles R., Jr.: *See*—
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.
Vendo Company, The: *See*—
Hanson, Theodore L., 3,675,819.
Verdier, Henri, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Snow tire. 3,675,700, Cl. 152-209.000.
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, to Charbonnages de France. Compositions of polymers of bicyclo (2.2.1) heptene-2 and derivatives. 3,676,390, Cl. 260-31.8hr.
Vermeulen, Geert Jan; and Barten, Antonius Martinus, to N.V. Machinefabrik L te Strake. Mechanism for preparing and presenting single thread lengths to a weft device of a weaving loom. 3,675,687, Cl. 139-127.00p.
Vernitron Corporation: *See*—
Berlincourt, Don A.; and Pim, Kendall A., 3,676,724.
Vertegaal, Jacobus G., to Stork Amsterdam N.V. Screen printing machine for printing in multicolour a horizontally advanced web. 3,675,571, Cl. 101-115.000.
Victor Company of Japan, Ltd.: *See*—
Morita, Akiyoshi; and Itoh, Yukio, 3,676,583.
Victor, Michel N. Quick release nut. 3,675,530, Cl. 85-33.000.
Vida, Julius A., to Kendall Company, The. Acyloxymethyl derivatives of diphenylhydantoin. 3,676,454, Cl. 260-309.500.
Vidal, Jean; and Lemoine, Jacques, to Stein Industrie. Method and means cutting out low temperature corrosion by sulphur containing fuel in the terminal parts of a steam generator in the absence of air-heating means. 3,675,423, Cl. 60-107.000.
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, to Stein Industrie. Method and means for operating a steam gas plant including a gas turbine, a steam turbine with its steam generator at the downstream end. 3,675,426, Cl. 60-39.18b.
Video Information Systems, Inc.: *See*—
Beck, Joseph H., 3,676,580.
Vidjak, Frank V., to Star-Kist Foods, Inc. Fish butchering apparatus. 3,675,273, Cl. 17-61.000.
Vietzke, Horst: *See*—
Ploger, Fritz; and Vietzke, Horst, 3,676,075.
Vigus, Cebron T., to Combustion Engineering, Inc. Hydraulic positioning saddle. 3,675,915, Cl. 269-58.000.
Vik, Albam M., to Dempco, Inc. Snowmobile ski and blade construction. 3,675,939, Cl. 280-28.000.
Viktora, Josef Karel; and Baukal, Albert Jozel, to Research Foundation of the Washington Hospital Center. Apparatus for transport and storage of liquid specimens for radio-immunoassay for insulin. 3,675,488, Cl. 73-421.00r.
Villemaud, Jean Etienne. Conveyors intended to carry directly objects or objects mounted on supports. 3,675,754, Cl. 198-20.000.
Vin Dick, James. Christmas tree lights. 3,676,662, Cl. 240-10.00t.
Vinogradov, Evgeny Alexandrovich; and Irisova, Nataliya Alexandrovna. Resonator for electromagnetic waves of the millimetric and submillimetric band. 3,676,808, Cl. 333-83.000.
VioBin Corporation, mesne: *See*—
Levin, Ezra, 3,676,552.
Vishay Intertechnology, Inc.: *See*—
Mulgueen, John J.; and Schoettly, Edward, 3,676,824.
Visser, Jeronimo, to Upjohn Company, The. Lincomycin production. 3,676,302, Cl. 195-80.00r.
Vocke, Elmer E.; and Baltz, Albert L., to Eagle Range & Manufacturing Company. Removable warming tray assembly. 3,676,643, Cl. 219-432.000.
Voeke, Elmer E.: *See*—
Baltz, Albert L.; and Voeke, Elmer E., 3,675,638.
Voet, Andries, to Huber, J. M., Corporation. Bonding metals to elastomer systems. 3,676,255, Cl. 156-306.000.
Vogel, Helmut: *See*—
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, 3,676,544.
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, to Consortium fur Elektrochemische Industrie GmbH. Apparatus for manufacturing semiconductor substances from germanium-silicon or molybdenum-silicon. 3,675,709, Cl. 164-335.000.
Voight, Frederick W., Jr.: *See*—
Lewis, Alan E.; and Voight, Frederick W., Jr., 3,676,485.
Voigtlander Aktiengesellschaft: *See*—
Papke, Friedrich, 3,675,552.
Volkswagenwerk Aktiengesellschaft: *See*—
Henning, Bodo, 3,675,505.
Volmer, Edmund, to Continental Gummi-Werke Aktiengesellschaft. Printing cloth. 3,676,282, Cl. 161-87.000.
von Beckh, Harald J. Life-supporting pressurizable vehicles. 3,675,878, Cl. 294-1.0ss.
Vornberger, Karl F.: *See*—
Kamborian, Jacob S.; Harriman, Allen C.; and Vornberger, Karl F., 3,675,260.
Vuillemenot, Jacques, to Ugine Kuhlmann. Stabilization of 1,1,1, trichloroethane with oxazole. 3,676,355, Cl. 252-153.000.
Vulcan Materials Company: *See*—
Christena, Ray C.; and Johnston, Earnest L., 3,676,291.
Christena, Ray C.; and Johnston, Earnest L., 3,676,424.
Vulmiere, Huguette Nelly: *See*—
Vulmiere, Jacques Claude; and Vulmiere, Huguette Nelly, 3,675,984.
Vulmiere, Jacques Claude; and Vulmiere, Huguette Nelly, to Etablissement Public: Agence Nationale de Valorisation de la Recherche (Anvar). Contact endoscope with stray light trap. 3,675,984, Cl. 350-96.00r.
Wada, Hiroyuki; and Sonoyama, Heikitsu, to Daikin Kogyo Co., Ltd. Process for preparing trifluoroacetic anhydride. 3,676,491, Cl. 260-546.000.
Wada, Toshiya: *See*—
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.
Waggonfabrik Verdingen A.G.: *See*—
Tonne, Franz; Brand, Werner; and Wolowitz, Benno, 3,675,593.
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Automatic transmission system. 3,675,511, Cl. 74-866.000.
Wakefield, Lynn B., to Firestone Tire & Rubber Company. Stabilization of butadiene-styrene rubbers. 3,676,396, Cl. 260-45.90r.
Walker, Dale A.: *See*—
Babcock, Lyndon R., Jr.; and Walker, Dale A., 3,676,527.
Walker, Raymond W., to Deep Oil Technology, Inc. Composite power applying means. 3,675,514, Cl. 81-57.110.
Walus, Aloysius N., to Du Pont de Nemours, E. I., and Company. Coating compositions of acrylic-epoxy ester graft copolymers utilizing aziridinyl alkyl acrylate or methacrylate in the copolymer. 3,676,385, Cl. 260-32.80r.
Walz, Donald T.: *See*—
McGusty, Elizabeth R.; Sutton, Blaine M.; and Walz, Donald T., 3,676,554.
Ward, John T.; and Keller, Allen B. Fluid level alarm device for tanks and the like to minimize spills of oil and other environmental pollutents. 3,675,614, Cl. 116-118.000.
Ward, William J., III, to General Electric Company. Facilitated transport liquid membrane. 3,676,220, Cl. 136-86.000.
Warner Electric Brake & Clutch Company: *See*—
Brendemuehl, Roger C., 3,676,009.
Obermark, John A., 3,675,747.
Warner, Milton Young, to Whirlpool Corporation. Radial unloader valve for thru-slot rotary compressor. 3,676,021, Cl. 417-299.000.
Warren, Samuel C., to United States of America, Navy. Asynchronous pulse width filter. 3,676,699, Cl. 307-234.000.
Warsager, Rubin. Pivotable mandrel. 3,675,913, Cl. 269-51.000.
Wasser, Willi: *See*—
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Watanabe, Takashi, to Kabushiki Kaisha Kawai Gakki Susakusho. Electric contact member. 3,675,320, Cl. 29-630.00d.
Watano, Yutaka: *See*—
Fujii, Tatsuo; and Watano, Yutaka, 3,676,823.
Waters, John R., to Johnston Laboratories, Inc. Apparatus for detecting biological activity. 3,676,679, Cl. 250-83.6ft.
Watkins, Bruce J., to Regan Forge and Engineering Company. Method and apparatus for separating subsea well conduit couplings from a remote floating vessel. 3,675,713, Cl. 166-.600.

Watrous, Donald L.; and Cote, Paul T., to General Electric Company. Sequencing static electronic flashing circuits for photoflash lamp array. 3,676,045, Cl. 431-95.000.

Watson, Gary Q. Protection of anchor rods against corrosion. 3,675,381, Cl. 52-166.000.

Watterlohn, Roy H.: *See—*
Badalich, Frank C.; and Watterlohn, Roy H., 3,675,994.

Watts, George T.; and Yeager, Robert W., to Goodyear Tire & Rubber Company, The. Bias-belted pneumatic tire. 3,675,703, Cl. 152-361.000.

Watts, James P. Method and apparatus for waste disposal. 3,675,428, Cl. 61-35.000.

Way, Anthony Paul: *See—*
Woodward, Anthony Ian; Purdie, Angus John Challis; and Way, Anthony Paul, 3,676,189.

Weaver, Galen K.; Shaffer, Howard A.; and Coughlin, Stephen A., to Babcock & Wilcox Company, The. Brazeable terminal body. 3,676,575, Cl. 174-94.00r.

Weaver, William R. Smoking pipe. 3,675,661, Cl. 131-212.000.

Webb, Albert E., to General Aniline & Film Corporation. Slide viewer. 3,675,354, Cl. 40-63.00a.

Webb, James E. Anchor carrier and guide. 3,675,608, Cl. 114-210.000.

Weber, Heinz, to Institut fur angewandte Physik der Universitat Bern. Process and device for the generation of a single-frequency light ray. 3,676,796, Cl. 331-94.500.

Wedge, Incorporated: *See—*
Wedge, William W., 3,675,675.

Wedge, William W., to Wedge, Incorporated. Ball valve with arm operator. 3,675,675, Cl. 137-368.000.

Weed, John Howard. Adjustable filter assembly. 3,675,402, Cl. 55-496.000.

Weeklund, Wayne Donald: *See—*
Johansson, Ronald C.; and Weeklund, Wayne Donald, 3,676,574.

Weeton, John W.: *See—*
Quatinetz Max; Weeton, John W.; and Herbell, Thomas P., 3,676,084.

Weiche, William J.: *See—*
Shattuck, Meredith David; and Weiche, William J., 3,676,210.

Weichel, Ernst. Process for breaking up a mass of produce. 3,675,696, Cl. 146-225.000.

Weimer, Paul Kessler, to RCA Corporation. Decoders and coupling circuits for solid state video pickup. 3,676,590, Cl. 178-7.100.

Weinstein, Warren D., to Sperry Rand Corporation. Material testing device for the continuous measurement of stress relaxation. 3,675,475, Cl. 73-89.000.

Weischedel, Herbert Rudolf; and Westerman, George Raymond, to Bell Telephone Laboratories, Incorporated. Synchronized self-oscillating switching regulator. 3,676,800, Cl. 331-111.000.

Weiss, Francis: *See—*
Isard, Arsene; and Weiss, Francis, 3,676,465.

Weissenburger, Helmut Wilhelm Otto, to Koninklijke Nederlandsche Gist-en Spiritusfabriek N.V. Imino compounds of penicillins and silyl esters thereof. 3,676,429, Cl. 260-239.100.

Weissman, Bernard. Dental anchor. 3,675,328, Cl. 32-15.000.

Weissman, Bernard. Dental anchoring pin and head therefor. 3,675,329, Cl. 32-15.000.

Weld-Motion, Inc.: *See—*
Gerould, David S., 3,675,837.

Wells, Robert R., to Northrop Corporation. Thin-film diffusion brazing of nickel and nickel base alloys. 3,675,311, Cl. 29-498.000.

Welty, Albert B., Jr. Sulfate control in ammonia flue gas desulfurization. 3,676,059, Cl. 23-2.000.

Welwyn Canada Limited: *See—*
Martin, John P.; Beninger, Darrell J.; and Lemon, John R., 3,675,317.
Marton, John P., 3,676,213.

Wendricks, Roland Norbert, to American Can Company. Extruder mixing screw. 3,676,034, Cl. 425-208.000.

Wensink, Bernardus Leonardus; and Cense, Adriaan, to U.S. Philips Corporation. Semiconductor device. 3,676,714, Cl. 307-303.000.

Werner, Alfred John, to Du Pont de Nemours, E. I., and Company. Rutile titanium dioxide pigment for paper laminates. 3,676,167, Cl. 106-300.000.

Werner, Ernst: *See—*
Leu, Francois J.; Tosin, Peter M.; and Werner, Ernst, 3,676,696.

Wernick, Jack Harry: *See—*
Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, 3,676,867.

Wesner, Charles R., to Sperry Rand Corporation. Turn heel limiting circuit. 3,676,648, Cl. 235-150.200.

West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., to British Scientific Instrument Research Association. Method and electro-optical system for inspecting bodies such as tiles. 3,676,008, Cl. 356-196.000.

Westcott, Vernon C., to Trans-Sonics, Inc. Tachometer generator. 3,676,765, Cl. 322-58.000.

Westergren, George A., to Whirlpool Corporation. Vacuum cleaner. 3,675,399, Cl. 55-357.000.

Westerhuis, Popko J.: *See—*
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., 3,676,294.

Westerman, George Raymond: *See—*
Weischedel, Herbert Rudolf; and Westerman, George Raymond, 3,676,800.

Western Electric Company, Incorporated: *See—*
Sherrill, Henry H., Jr., 3,675,299.

Westinghouse Air Brake Company: *See—*
Stewert, John F.; and Smith, Dean A., 3,675,347.

Westinghouse Electric Corporation: *See—*
Adams, Rodney V.; and Medlin, Roger E., 3,676,875.
Driver, Michael C.; and Geisler, Martin J., 3,675,313.
Hetrick, Richard R., 3,676,290.
Hollister, Robert H.; Wilburn, Garlington C.; and Green, Kurt G., 3,676,623.
Lanoue, Thomas J.; and De Neef, John G., 3,676,579.
McLeod, Garth M.; Copeland, Clinton R.; and Rieger, Gilbert N., 3,675,287.
Nix, Lawrence A., Jr.; and Balthis, David L., 3,676,591.
Scala, Luciano C.; and Bartlett, Wilford O., 3,676,383.
Trunzo, Floyd F.; and Scheidmantel, David A., 3,676,814.
Wilson, John R.; and Shariff, Sadig A., 3,676,749.

Westinghouse Learning Corporation: *See—*
Mc Millin, John V.; and Miller, D. Larry, 3,676,690.

Westland Aircraft Limited: *See—*
Basham, Edgar William James; and Tizard, Kenneth Wilfrid, 3,675,649.
Furlong, Owen Desmond Arthur Charles; and Bottrell, Neil L., 3,676,238.

Wetzel, Clifford C. Sod gathering apparatus. 3,675,793, Cl. 214-6.00b.

Weyant, Romer G.; and Kaar, Kenneth B. Vehicle carrier. 3,675,800, Cl. 214-85.100.

Weyerhaeuser Company: *See—*
Dedrick, Dallas S., 3,675,336.

Wheatley, Carl Franklin, Jr.: *See—*
Einthoven, Willem Gerard; Jetter, Evelyn Speter; and Wheatley, Carl Franklin, Jr., 3,676,229.

Wheeler, Charles B. Horizontal load positioner. 3,675,961, Cl. 294-67.00r.

Whipple, Edward R., to General Electric Company. High speed shaft disconnect utilizing a fusible element. 3,675,444, Cl. 64-28.00r.

Whirlpool Corporation: *See—*
Fellwock, Charles G.; and Tuley, Donald L., 3,675,271.
Linstromberg, William J., 3,675,437.
Nordeen, Erwin E., 3,675,268.
Warner, Milton Young, 3,676,021.
Westergren, George A., 3,675,399.

White, Jay E., Jr., to Reflex Corporation of Canada Limited. Mounting of sealed beam headlamps. 3,676,666, Cl. 240-41.500.

White, John G.: *See—*
Schwaller, Lando J.; Razal Albert J.; and White, John G., 3,675,450.

White, Kenneth N.; and Meyer, Harold E. Hand tool for applying edge banding to laminated plastic boards. 3,676,272, Cl. 156-574.000.

White, Peter: *See—*
Malandro, George H.; and White, Peter, 3,676,849.

White, Roy Ernest: *See—*
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, 3,676,876.

White, William R.: *See—*
Chemtob, Elie M.; White, William R.; and Marcote, Rolando V., 3,675,773.

Whitehouse Products, Inc.: *See—*
Rigolini, Venerio J., 3,675,556.

Whitey Research Tool Co.: *See—*
Matousek, Stephen, 3,675,895.

Whiteyer, James Glenn, to Bell Telephone Laboratories, Incorporated. Multiple trunk signal arrangement. 3,676,604, Cl. 179-18.0ab.

Whitney, Charles D., to Colorado Business Development Corporation, mesne. Reloadable two-piece shotgun cartridge. 3,675,576, Cl. 102-44.000.

Whittaker Corporation, mesne: *See—*
Aisenberg, Sol; and Dodge, James B., 3,675,451.

Wiart, Albert; and Cynober, Simon, to Jeumont-Schneider. Handling conveyors having self-propelled trolleys. 3,675,585, Cl. 104-148.0lm.

Wicker, Ralph C., to American Bank Note Company, mesne. Printing method and article for hiding halftone images. 3,675,948, Cl. 283-6.000.

Widdershoven, Louis Hubertus, to N.V. Nederlandsche Steenkolenmijnen 'Willem-Sophia'. Steplessly variable speed changer. 3,675,509, Cl. 74-793.000.

Wideman, Gilder L., 17.5% to Green, Don, 17/5% to Gordon, Bruce L. and 10% to Graviee, L. Clark. Perineal heating device. 3,675,659, Cl. 128-395.000.

Widmer, Adolf: *See—*
Steiner, Josef; and Widmer, Adolf, 3,675,686.

Wiedmann, Siegfried K., to International Business Machines Corporation. Saturation control scheme for TTL Circuit. 3,676,713, Cl. 307-300.000.

Wiedmer, Fritz S., to International Business Machines Corporation. Pushbutton keyboard switch array and associated printed circuit logic cards. 3,676,615, Cl. 200-1.00r.

Wiedmer, Fritz S., to International Business Machines Corporation. EDS serial switch array. 3,676,616, Cl. 200-5.00r.

Wieman, Paul R.: *See—*

Ryan, John W.; Tomkinson, John G.; and Wieman, Paul R., 3,675,925.

Wiener Schwachstromwerke Gesellschaft m.b.H.: *See*—
Kapun, Walter, 3,675,911.

Wiesenhofer, Frank H.: *See*—
Blatt, Leland Francis; and Wiesenhofer, Frank H., 3,675,734.

Wieser, Peter F.; and Dore, James E., to Olin Corporation. Method of grain refining aluminum base alloys. 3,676,111, Cl. 75-142.000.

Wiggins Teape Research & Development Limited: *See*—
Woodward, Anthony Ian; and Purdie, Angus John Challis, 3,676,175.
Woodward, Anthony Ian; Purdie, Angus John Challis; and Way, Anthony Paul, 3,676,189.

Wilburn, Garlington C.: *See*—
Hollister, Robert H.; Wilburn, Garlington C.; and Green, Kurt G., 3,676,623.

Wilder, Harvey H., to Carborundum Company, The. Direct pressure treating device. 3,675,374, Cl. 51-12.000.

Willems, Jozef Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, to Agfa-Gevaert. Chemical development of light-sensitive lead compositions. 3,676,131, Cl. 96-48.000.

Willems, Leonardus Franciskus, to U.S. Philips Corporation. Periodicity analyser for a quasi-periodic signal including a detection circuit. 3,676,596, Cl. 179-1.0sa.

Willersinn, Herbert: *See*—
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.

Williams, David Christopher Robert, to Thorn Electrical Components Limited. Controlled degradation of a visual scene. 3,675,344, Cl. 35-12.00n.

Williams, Earl P.: *See*—
Schultz, Herman S.; Katzenstein, William; and Williams, Earl P., 3,676,408.

Williams, Theodore S.: *See*—
Dorn, Rolf K.; and Williams, Theodore S., 3,676,519.

Williamson, Roger C.: *See*—
Onopchenko, Anatoli; Schulz, Johann G. D.; and Williamson, Roger C., 3,676,488.

Willman, Bertram T., to Esso Production Research Company. Arctic ice platform. 3,675,429, Cl. 61-46.000.

Wilms, Carl A.: *See*—
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,675,900.

Wilsch, Herbert: *See*—
Winkler, Alfred; Wilsch, Herbert; and Winkler, Friedrich, 3,675,992.

Wilsch, Herbert; and Muller, Hermann, to Agfa-Gevaert Aktiengesellschaft. Film transporting mechanism for cinematographic apparatus. 3,675,996, Cl. 352-194.000.

Wilson, Edward S. Ski and pole grips. 3,675,835, Cl. 224-45.00s.

Wilson, Gardner P., to Gould, Inc., mesne. Linear three-dimensional gaging and form measuring machine. 3,675,333, Cl. 33-23.00c.

Wilson, John R.; and Shariff, Sadig A., to Westinghouse Electric Corporation. Switch-operating mechanism with particular application thereof to potential-transformer disconnecting assembly. 3,676,749, Cl. 317-103.000.

Wilson, Ray. Overhead cab crane control structure. 3,675,786, Cl. 212-127.000.

Wilson, Thomas: *See*—
Nelson, Leonard; and Wilson, Thomas, 3,676,120.

Wilton Corporation: *See*—
Kartasuk, Raymond H.; and Smierciak, Walter, 3,675,916.

Wilton, Henry T., to American Optical Corporation. Dual magnification projection lens. 3,675,998, Cl. 353-101.000.

Winkler, Alfred; Wilsch, Herbert; and Winkler, Friedrich, to Agfa-Gevaert Aktiengesellschaft. Projector for use with cassettes for motion picture film. 3,675,992, Cl. 352-72.000.

Winkler, Friedrich: *See*—
Winkler, Alfred; Wilsch, Herbert; and Winkler, Friedrich, 3,675,992.

Winkler, John C.; and Senyard, Corley P., to Esso Research and Engineering Company. Method for preparing resin feed. 3,676,412, Cl. 260-82.000.

Winkler, Laszlo: *See*—
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.

Winkless, Robert A., to Continental Can Company, Inc. Pigmented outside side striper. 3,675,617, Cl. 118-2.000.

Winslade, Harry Herbert, to Inter-Locked Fasteners Limited. Fasteners. 3,675,280, Cl. 24-221.00k.

Winstead, Thomas W., to Great Lakes Carbon Corporation. Continuous method of extruding and theroforming skin-covered foamed thermoplastic articles. 3,676,537, Cl. 264-48.000.

Wintersdorff, Peter, to Kelco Company. Method of preparing freeze-thaw stable spoonable salad dressing. 3,676,157, Cl. 99-144.000.

Wire Sales Company: *See*—
Silby, Harry, 3,676,164.

Wirth, Joseph G., to General Electric Company. 2,2'-Bis(3-pyridinols). 3,676,448, Cl. 260-296.00d.

Wirz, Arno, to Heidelberger Druckmaschinen Aktiengesellschaft. Suction head in sheet-feed systems. 3,675,917, Cl. 271-26.000.

Wise, Layton A., to Mine Safety Appliances Company. Holder for oxygen producing canister. 3,675,296, Cl. 29-200.00p.

Wiser, Joseph E.; and Gerhardt, Peter H., to Mallory, P. R., & Co., Inc. Means connecting a synchronous motor to a gear train housing. 3,676,725, Cl. 310-89.000.

Wishnie, Frederick T., to Eutectic Welding Alloys Corporation. Process for electrochemical machining employing a die of a special alloy. 3,676,310, Cl. 204-143.00m.

Wixon, Harold Eugene: *See*—
Gerecht, John Fred; and Wixon, Harold Eugene, 3,676,341.

Wohl, Charles J.; Schere, Jonathan L.; and Costello, Thomas V., to Edco Corporation. Switching apparatus for a phased transducer array. 3,676,839, Cl. 340-6.00r.

Wohl, Robert J.: *See*—
Kozol, Eugene T.; and Wohl, Robert J., 3,676,588.

Wolf, Gerhard D.; Blankenstein, Gunter; and Nischk, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. High molecular weight aromatic polyamides having an affinity for basic dyes. 3,676,525, Cl. 260-857.000.

Wolfe, Merritt W.: *See*—
Enabnit, Robert S.; and Wolfe, Merritt W., 3,675,375.

Wolff, Hanns H., to United States of America, Navy. Fire fighting trainer. 3,675,342, Cl. 35-10.000.

Wolowitz, Benno: *See*—
Tonne, Franz; Brand, Werner; and Wolowitz, Benno, 3,675,593.

Wong, Philip: *See*—
Fischer, Leonard G.; and Wong, Philip, 3,676,158.

Woodhall, Edwin S.: *See*—
Appleby, Paul E.; Riggs, Robert S.; and Woodhall, Edwin S., 3,676,260.

Woodrow, Taylor, Construction Limited: *See*—
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, 3,675,474.

Woodward, Anthony Ian; and Purdie, Angus John Challis, to Wiggins Teape Research & Development Limited. Paper coated with pigmented resin and optical brightening agent. 3,676,175, Cl. 117-33.50t.

Woodward, Anthony Ian; Purdie, Angus John Challis; and Way, Anthony Paul, to Wiggins Teape Research & Development Limited. Method of coating a polyolefin or polyolefin-coated paper sheet material. 3,676,189, Cl. 117-76.00p.

Worcester, Joseph A., to General Electric Company. Audio frequency indicator for scan tuned radio receiver. 3,676,781, Cl. 325-455.000.

Wowk, Nicholas F.: *See*—
Newberry, George M.; and Wowk, Nicholas F., 3,675,820.

Wrabetz, Voyta E., to Square D Company. Plunger operated reed relay switch. 3,676,812, Cl. 335-205.000.

Wright, John, to Koppers Company, Inc. Flexible centrifugal clutch coupling. 3,675,750, Cl. 192-105.0ba.

Wright, John F.; and Olson, James R., to Eastman Kodak Company. Glow discharge polymerization coating of toners for electrophotography. 3,676,350, Cl. 252-62.100.

Wright, William F.: *See*—
Meyer, Byron W.; and Wright, William F., 3,676,032.

Wszolek, Walter R.: *See*—
Kehr, Clifton L.; and Wszolek, Walter R., 3,676,195.
Kehr, Clifton L.; and Wszolek, Walter R., 3,676,283.

Wu, Dao-Tsing: *See*—
Dyk, John W.; and Wu, Dao-Tsing, 3,676,172.

Wu, Jie Chu: *See*—
Burger, Francis J. P. J.; and Wu, Jie Chu, 3,676,752.

Wyandotte Chemicals Corporation: *See*—
Urry, Wilbert H.; and Niu, Hsien Ying, 3,676,469.

Xercon, Inc., mesne: *See*—
Myer, Clifford E., 3,676,685.

Xerox Corporation: *See*—
Ciccarelli, Roger N., 3,676,313.
Gundlach, Robert W., 3,676,215.
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,676,116.
Mott, George R.; and Van Wagner, Edward M., 3,676,118.

Yabuta, Yukio, to Fuji Photo Film Co., Ltd. Electromagnetic eddy current induction type conveying method. 3,675,757, Cl. 198-41.000.

Yaklich, John A. Furrow extending attachments for tractors. 3,675,723, Cl. 172-100.000.

Yale, Harry Louis; and Petigara, Ramesh, to Squibb, E. R., & Sons, Inc. 1,2-Dihydroquinobenzoxa(or thia)zepine derivatives. 3,676,445, Cl. 260-288.00r.

Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, to Matsushita Denko Kabushiki Kaisha. Electric dry shaver. 3,675,324, Cl. 30-43.600.

Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, to Takeda Chemical Industries, Ltd. Method for producing monoacyl derivatives of antibiotic T-2636C. 3,676,300, Cl. 195-29.000.

Yamamoto, Hisao: *See*—
Hirohashi, Toshiyuki; Izumi, Takahiro; and Yamamoto, Hisao, 3,676,460.

Yamamoto, Tadaaki; and Kasai, Toshiyuki, to Nippon Kogaku K.K.; represented by Yutaka Sugi. Reflecting optical system capable of compensating for the variation in polarization mode. 3,675,986, Cl. 350-157.

Yamamoto, Takaaki: *See*—

Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.

Yamashita, Chikao, to Brother Kogyo Kabushiki Kaisha. Sewing machine convertible lock stitch to chain stitch. 3,675,603, Cl. 112-168.000.

Yamato Setubi Koji Kabushiki Kaisha: *See*—
Shibayama, Daigoro; and Mashimo, Teruo, 3,676,074.

Yano, Kaoru: *See*—
Kaneko, Haruo; and Yano, Kaoru, 3,676,600.

Yasuda, Atsuhiro; and Kobayashi, Koichi, to Tokyo Shibaura Electric Co., Ltd. Channel selecting device. 3,675,496, Cl. 74-10.600.

Yates, Paul C.: *See*—
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., 3,676,477.

Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Refractories bonded with aluminides, nickelides, or titanides. 3,676,161, Cl. 106-55.000.

Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Method for making metal oxide sols in polar organic solvents. 3,676,362, Cl. 252-309.000.

Yeager, Robert W.: *See*—
Watts, George T.; and Yeager, Robert W., 3,675,703.

Yew, Nelson C.: *See*—
Dao, James; and Yew, Nelson C., 3,676,670.

Yokoo, Makoto: *See*—
Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, 3,676,402.

Yokoyama, Masuzo: *See*—
Tashiro, Kijuro; and Yokoyama, Masuzo, 3,676,418.

Yokozato, Junichi; and Kurihara, Shigeru, to Zenza Bronica Kogyo Kabushiki Kaisha. Mirror moving mechanism for single-lens reflex cameras. 3,675,557, Cl. 95-42.000.

Yoshida, Akira: *See*—
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.

Young, Jeffrey W.: *See*—
Putnam, Robert C.; and Young, Jeffrey W., 3,676,389.

Young, William E.: *See*—
Brick, Edmund J., 3,675,528.

Young, William O., Jr.; and Quattlebaum, Walter J., to Deering Milliken Research Corporation. Pull tab machine. 3,675,836, Cl. 226-113.000.

Young, William O., Jr.; and Quattlebaum, Walter J., to Deering Milliken Research Corporation. Punching openings in a web and heat sealing tabs thereto. 3,676,251, Cl. 156-252.000.

Zajac, Theodore S.; and George, Hal E., to Parker-Hannifin Corporation. Hydraulic motor. 3,675,539, Cl. 91-477.000.

Zaki, Wahib Nassif; and Biard, Daniel Guy Jean, to Procter & Gamble Company, The. Enzyme-containing liquid detergent compositions. 3,676,374, Cl. 252-551.000.

Zaky, Amin Y.: *See*—
Goetchius, Norman E.; and Zaky, Amin Y., 3,676,602.

Zapfe, Paul C., to Fort Howard Paper Company. Ink bleed tester. 3,675,476, Cl. 73-150.000.

Zaviantseff, Vladimir T., to United States of America, National Aeronautics and Space Administration. Apparatus for ionization analysis. 3,676,674, Cl. 250-71.50r.

Zebe, Charles, to Bell Telephone Laboratories, Incorporated. Method for extracting wires from a cable bundle. 3,675,315, Cl. 29-427.000.

Zeiss, Carl: *See*—
Prugger, Hans; and Torge, Reimund, 3,676,004.

Zellmer, Richard C.: *See*—
Miller, Lee A.; and Zellmer, Richard C., 3,675,353.

Zenith Radio Corporation: *See*—
Foster, Leigh Curtis, 3,676,592.
Green, Mino, 3,676,788.

Zenza Bronica Kogyo Kabushiki Kaisha: *See*—
Yokozato, Junichi; and Kurihara, Shigeru, 3,675,557.

Zergenyi, Janos; and Habicht, Ernst, to Geigy Chemical Corporation. Producing diuretic and saluretic effects with benzafuran carboxylic acid derivatives. 3,676,560, Cl. 424-285.000.

Zetterlund, Stanley L.; and Skogen, Robert O., to Nutting Truck and Caster Company. Tow line truck and bumper system. 3,675,587, Cl. 104-172.0bt.

Zhukovsky, Alexandr Ivanovich; Dobroskokov, Anatoly Lukich; and Orlovsky, Vasily Ivanovich. Fuel-feed system of an aircraft engine. 3,675,772, Cl. 210-90.000.

Ziegler, Helmut, to ITT Industries, Inc. Method for assembling hydraulic accumulators. 3,675,308, Cl. 29-422.000.

Ziegler, William E., to Hoover Ball and Bearing Company. Article trimmer. 3,675,521, Cl. 82-101.000.

Zilliken, Frederick William; and Egge, Heinz, to American Home Products Corporation. Certain linoleic and linolenic acid ester fractions of vegetable oils and derivatives thereof. 3,676,472, Cl. 260-410.90r.

Zinn, Frank R., to Bingham & Taylor. Apparatus for use in testing for the presence of a given voltage with respect to ground on a pipeline. 3,676,567, Cl. 174-37.000.

Zirkle, Charles L.: *See*—
Kaiser, Carl; and Zirkle, Charles L., 3,676,435.

Zochil, Francesco. Quick coupler assembly. 3,675,544, Cl. 94-45.00a.

Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, to Conradty, C. High output electrode with stabilized electric arc. 3,676,371, Cl. 252-507.000.

Zuckerman, Mathew M.; and Molof, Alan H., to Envirotech Corporation, mesne. Wastewater treatment sequence. 3,676,334, Cl. 210-9.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AMP Inc.: *See*—
Gillissen, Hermanus P. J. Re. 27,429.
Gillissen, Hermanus P. J., to AMP Inc. Electrical connector assembly and mounting means therefor. Re. 27,429, 7–11–72, Cl. 339—198.
Hall, Elmer D., and J. E., Jr., to Weatherford Oil Tool Co., Inc. Well bore cleaner and cement disperser. Re. 27,425, 7–11–72, Cl. 166—173.
Hall, Jesse E., Jr.: *See*—
Hall, Elmer D., and J. E., Jr. Re. 27,425.
Hubbard, Otis E.: *See*—
Leslie, John H., and Hubbard. Re. 27,427.
Leslie, John H., and O. E. Hubbard, to Signode Corp. Feed chute booster for flexible strap. Re. 27,427, 7–11–72, Cl. 100—26.
Lincoln, James D., J. F. Wasmund, to Whittaker Corp. Low temperature curing nylon-epoxy-phenolic adhesive. Re. 27,426, 7–11–72, Cl. 260—831.
Monsanto Co.: *See*—
Torrenzano, Archie P., and Pincince. Re. 27,432.
Nielsen, Anker J., to M. B. Skinner Co. Bits for pipe punches. Re. 27,431, 7–11–72, Cl. 137—318.
Pincince, Richard T.: *See*—
Torrenzano, Archie P., and Pincince. Re. 27,432.
Signode Corp.: *See*—
Leslie, John H., and Hubbard. Re. 27,427.
Skinner, M. B., Co.: *See*—
Nielsen, Anker J., Jr. Re. 27,431.
Tohoku Oki Electric Co.: *See*—
Watase, Fumio. Re. 27,428.
Torrenzano, Archie P., and R. T. Pincince, to Monsanto Co. Solvent cleaning system. Re. 27,432, 7–11–72, Cl. 134—12.
Wasmund, John F.: *See*—
Lincoln, James D., and Wasmund. Re. 27,426.
Watase, Fumio, to Tohoku Oki Electric Co. Crystal-controlled grounded emitter oscillator. Re. 27,428, 7–11–72, Cl. 331—116.
Weatherford Oil Tool Co., Inc.: *See*—
Hall, Elmer D., and J. E., Jr. Re. 27,425.
Whittaker Corp.: *See*—
Lincoln, James D., and Wasmund. Re. 27,426.
Wimmer, Robert. Plumbing fixture and method of manufacturing the same. Re. 27,430, 7–11–72, Cl. 220—64.

LIST OF PLANT PATENTEES

Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,231.
Jessel, Walter H., Jr., and Duffett. 3,232.
Jessel, Walter H., Jr., and Duffett. 3,233.
Jackson & Perkins Co.: *See*—
Warriner, William A. 3,234.
Warriner, William A. 3,235.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,231, 7–11–72, Cl. 78.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,232, 7–11–72, Cl. 82.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,233, 7–11–72, Cl. 82.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,234, 7–11–72, Cl. 19.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,235, 7–11–72, Cl. 23.
Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,231.
Jessel, Walter H., Jr., and Duffett. 3,232.
Jessel, Walter H., Jr., and Duffett. 3,233.

LIST OF DESIGN PATENTEES

AMF Inc.: *See*—
Hill, Loran R. 224,254.
Novak, Stanley M., Jr. 224,255.
Adams, Wilbur H. Three dimensional puzzle. 224,251,7–11–72, Cl. D34—15.
Addy, James D.: *See*—
Esquina, Joseph R., and Addy. 224,269.
American Can Co.: *See*—
Kinkel, Christian F., and Pillnik. 224,209.
Apicella, Andrew. Bottle cap. 224,210, 7–11–72, Cl. D9—284.
Ashby, Bruce: *See*—
Lovejoy, Robert B., Ashby, Bosley, and Douglas. 224,253.
Award International, Inc.: *See*—
Tytel, Bernard. 224,241.
Baeza, Armando M.: *See*—
Bass, Sidney, Baeza, and Christopher. 224,240.
Bass, Sidney, Baeza, Christopher, and Kuchta. 224,249.
Baldwin, Gary L., to SBI Inc. Vending stand. 224,215, 7–11–72, Cl. D13—1.
Bandoski, Stanley J., Jr.: *See*—
Flynn, Daniel M., Bandoski, and Clow. 224,228.
Flynn, Daniel M., Bandoski, and Clow. 224,232.
Barczak, Edward: *See*—
Merendino, Salvatore, Barczak, and Lambach. 224,270.
Bass, Sidney, A. Baeza, and J. H. Christopher, to Mattel, Inc. Figure toy or the like. 224,240, 7–11–72, Cl. D34—4.
Bass, Sidney, A. M. Baeza, J. H. Christopher, and F. J. Kuchta, to Mattel, Inc. Freely rolling support for figure toy or the like. 224,249, 7–11–72, Cl. D34—15.
Baynes, William R.: *See*—
Hock, Donal D., Feigenbaum, Korte, and Baynes. 224,243.
Beaver, Ted L., to Continental Can Co., Inc. Bottle or similar article. 224,201, 7–11–72, Cl. D9—42.
Beck, William. Font of type. 224,274, 7–11–72, Cl. D64—12.
Bennett, William E. Passenger carrying tow kite. 224,248, 7–11–72, Cl. D34—15.
Boden, Joseph, to Boden Products, Inc. Bottle. 224,202, 7–11–72, Cl. D9—44.
Boden Products, Inc.: *See*—
Boden, Joseph. 224,202.
Bosley, Denis V.: *See*—
Lovejoy, Robert B., Ashby, Bosley, and Douglas. 224,253.
Boultbee, James A. Stroller. 224,220, 7–11–72, Cl. D14—14.
Brodsky, Louis, and B. Zeitzer, to E. R. Squibb & Sons, Inc. Medicament dispenser spoon. 224,260, 7–11–72, Cl. D52—1.
Bud Radio, Inc.: *See*—
Miller, Leon G. 224,229.
Burlington Industries, Inc.: *See*—
Logan, Ralph H. 224,194.
Christopher, Joyce H.: *See*—
Bass, Sidney, Baeza, and Christoper. 224,240.
Bass, Sidney, Baeza, Christopher, and Kuchta. 224,249.
Clark, Larry G. Toy jail playhouse. 224,252, 7–11–72, Cl. D34—15.
Clow, William R.: *See*—
Flynn, Daniel M., Bandoski, and Clow. 224,228.
Flynn, Daniel M., Bandoski, and Clow. 224,232.
Cole, Richard C. Power boat. 224,275, 7–11–72, Cl. D71—1.
Collins, Delmas E., to Jones-Zylon, Inc. Wash basin. 224,222, 7–11–72, Cl. D23—48.
Conner, James M., R. H. Davison, M. S. Dietz, and B. K. Johnson, to Polaroid Corp. Photographic camera or similar article. 224,272, 7–11–72, Cl. D61—1.
Conradi, Eugene P.: *See*—
De Puydt, Frank A., and Conradi. 224,221.
Continental Can Co., Inc.: *See*—
Beaver, Ted L. 224,201.
Crain, Philip W., F. E. Schlau, and P. Tam, to Mattel, Inc. Launcher for toy aircraft or the like. 224,250, 7–11–72, Cl. D34—15.
Cyr, Steve, and M. Whelan, to Standard Oil Co. (Indiana). Compartmented tray. 224,207, 7–11–72, Cl. D9—185.
Cyr, Steven J., and M. W. Whelan, to Standard Oil Co. (Indiana). Compartmented tray. 224,206, 7–11–72, Cl. D9—185.
Damon Corp.: *See*—
Munn, David E., and Maddestra. 224,223.
Davison, Richard H.: *See*—
Conner, James M., Davison, Dietz, and Johnson. 224,272.
De Puydt, Frank A., and E. P. Conradi, to Dico Co., Inc. Vehicle spoke wheel. 224,221, 7–11–72, Cl. D14—30.
Dico Co., Inc.: *See*—
De Puydt, Frank A., and Conradi. 224,221.
Dietz, R. E., Co.: *See*—
Nagel, Robert I. 224,258.
Doman, Donald W., to Kohler Co. Handle for plumbing fixture. 224,225, 7–11–72, Cl. D23—28.
Donoghue, Robert J. Bottle. 224,203, 7–11–72, Cl. D9—131.
Douglas, Raymond J.: *See*—
Lovejoy, Robert B., Ashby, Bosley, and Douglas. 224,253.
Empire Furniture Corp.: *See*—
Keller, Huey T. 224,199.

Esquina, Joseph R., and J. D. Addy. Combined seat and vibratable reed musical instrument. 224,269, 7–11–72, Cl. D56—1.

Ewers, Ronald L., to Game Time, Inc. Playground equipment support. 224,246, 7–11–72, Cl. D34—5.

Fedtro, Inc.: *See*—
Kahn, Robert D. 224,276.

Feigenbaum, Robert E.: *See*—
Hock, Donal D., Feigenbaum, Korte, and Baynes. 224,243.

Flynn, Daniel M., S. J. Bandoski, Jr., and W. R. Clow, to Hampden Engineering Co. Fractional horsepower DC controller. 224,228, 7–11–72, Cl. D26—13.

Flynn, Daniel M., S. J. Bandoski, Jr., and W. R. Clow, to Hampden Engineering Co. Fractional horsepower AC controller. 224,232, 7–11–72, Cl. D26—13.

Fujita, Ryuzo. Housing for an electronic communication apparatus. 224,233, 7–11–72, Cl. D26—14.

Galistyn Co., The: *See*—
Ocuin, Morton. 224,256.

Game Time, Inc.: *See*—
Ewers, Ronald L. 224,246.
Wormser, Robert S. 224,213.
Wormser, Robert S. 224,214.

General Electric Co.: *See*—
Kainass, Andrew. 224,235.

General Mills Fun Group, Inc.: *See*—
Meth, Harry, and Lake. 224,239.

Gorelick, Marvin. Chair or the like. 224,189, 7–11–72, Cl. D6—20.

Graser, Earl J., to Olinkraft, Inc. Bottle carton. 224,204, 7–11–72, Cl. D9—176.

Graser, Earl J., to Olinkraft, Inc. Bottle carton. 224,205, 7–11–72, Cl. D9—176.

Grosfillex, Raymond, to Societe Grosfillex. Chair. 224,192, 7–11–72, Cl. D6—70.

Grosfillex, Raymond, to Societe Grosfillex. Chair. 224,193, 7–11–72, Cl. D6—70.

Hampden Engineering Co.: *See*—
Flynn, Daniel M., Bandoski, and Clow. 224,228.
Flynn, Daniel M., Bandoski, and Clow. 224,232.

Harman-Kardon, Inc.: *See*—
Yurdin, Carl. 224,262.
Yurdin, Carl. 224,263.

Hastings, Raymond I., to Professional Sports Marketing, Inc. Magazine rack. 224,198, 7–11–72, Cl. D6—184.

Hermanson, Terry, to Mr. Christmas Inc. Decorative reflector for a Christmas light. 224,237, 7–11–72, Cl. D29—1.

Hill, Loran R., to AMF Inc. Tricycle. 224,254, 7–11–72, Cl. D34—15.

Hock, Donal D., to Mattel, Inc. Swing seat or the like. 224,244, 7–11–72, Cl. D34—5.

Hock, Donal D., to Mattel, Inc. Combined playground climber and support for swings or the like. 224,245, 7–11–72, Cl. D34—5.

Hock, Donal D., R. E. Feigenbaum, E. N. Korte, and W. R. Baynes, to Mattel, Inc. Playground apparatus or the like. 224,243, 7–11–72, Cl. D34—5.

Intorcio, Vincent J. Mobile cocktail bar. 224,195, 7–11–72, Cl. D6—144.

Jackson, Verner L.: *See*—
Waddle, Thirl W., Wood, and Jackson. 224,242.

Jamison, Grant E., to Jamison, Inc. Combined playground tree house and slide. 224,247, 7–11–72, Cl. D34—5.

Jamison, Inc.: *See*—
Jamison, Grant E. 224,247.

Jones-Zylon, Inc.: *See*—
Collins, Delmas E. 224,222.

Kahn, Robert D., to Fedtro, Inc. Siren. 224,276, 7–11–72, Cl. D72—1.

Kainass, Andrew, to General Electric Co. Portable tape recorder. 224,235, 7–11–72, Cl. D26—14.

Kamata, Eitaro, to Shoei Kakoh Co., Ltd. Helmet. 224,182, 7–11–72, Cl. D2—232.

Kelbish, Edward D. Pre-assembled modular housing structure. 224,216, 7–11–72, Cl. D13—1.

Kelbish, Edward D. Pre-assembled modular housing structure. 224,217, 7–11–72, Cl. D13—1.

Kelbish, Edward D. Pre-assembled modular housing structure. 224,218, 7–11–72, Cl. D13—1.

Keller, Huey T., to Empire Furniture Corp. Headboard for a bedstead or similar article. 224,199, 7–11–72, Cl. D6—198.

Kelso, James W., to MSI Data Corp. Data input terminal. 224,230, 7–11–72, Cl. D26—5.

Kinkel, Christian F. and B. F. Pilinik, to American Can Co. Container end. 224,209, 7–11–72, Cl. D9—255.

Klepper, McClellan J. Head and handle for toothbrush or the like. 224,187, 7–11–72, Cl. D4—25.

Kohler Co.: *See*—
Doman, Donald W. 224,225.

Korte, Erwin N.: *See*—
Hock, Donal D., Feigenbaum, Korte, and Baynes. 224,243.

Kretz, Edward J., to Owens-Illinois, Inc. Combined jug and closure. 224,200, 7–11–72, Cl. D9—41.

Kuchar, Joseph, to Record Chemical Co., Inc. Display box. 224,208, 7–11–72, Cl. D9—242.

Kuchta, Frank J.: *See*—
Bass, Sidney, Baeaz, Christopher, and Kuchta. 224,249.

Lake, Susan: *See*—
Meth, Harry, and Lake. 224,239.

Lambach, Adolph D.: *See*—
Merendino, Salvatore, Barczak, and Lambach. 224,270.

Larson, Ellis D. Component for firill works, railings, columns and the like. 224,211, 7–11–72, Cl. D13—1.

Larson, Ellis D. Component for grill works, railings, columns and the like. 224,212, 7–11–72, Cl. D13—1.

Leaver, Gardner, to Steelcase Inc. Chair. 224,188, 7–11–72, Cl. D6—20.

Lee, Robert M. Bracelet. 224,257, 7–11–72, Cl. D45—7.

Logan, Ralph H., to Burlington Industries, Inc. Separable lap tray table unit. 224,194, 7–11–72, Cl. D6—138.

Lovejoy, Robert B., B. Ashby, D. V. Bosley, and R. J. Douglas, to Mattel, Inc. Tow tower for simulated flight control. 224,253, 7–11–72, Cl. D34—15.

MSI Data Corp.: *See*—
Kelso, James W. 224,230.

Maddestra, Robert: *See*—
Munn, David E., and Maddestra. 224,223.

Maeda, Hisashi: *See*—
Yamamoto, Mititaka, Yaida, and Maeda. 224,273.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 224,261, 7–11–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 224,264, 7–11–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 224,265, 7–11–72, Cl. D54—12.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 224,267, 7–11–72, Cl. D54—12.

Mango, Joseph R., to Sunbeam Corp. Heater. 224,224, 7–11–72, Cl. D23—122.

Mango, Joseph R., to Sunbeam Corp. Heater. 224,226, 7–11–72, Cl. D23—122.

Mango, Joseph R., to Sunbeam Corp. Heater. 224,227, 7–11–72, Cl. D23—122.

Mattell, Inc.: *See*—
Bass, Sidney, Baeza, and Christopher. 224,240.
Bass, Sidney, Baeza, Christopher, and Kuchta. 224,249.
Crain, Philip W., Schlau, and Tam. 224,250.
Hock, Donal D., Feigenbaum, Korte, and Baynes. 224,243.
Hock, Donal D. 224,244.
Hock, Donal D. 224,245.
Lovejoy, Robert B., Ashby, Bosley, and Douglas. 224,253.
Merendino, Salvatore, Barczak, and Lambach. 224,270.

Merendino, Salvatore, E. Barczak, and A. D. Lambach, to Mattel, Inc. Cabinet for keyboard instrument or the like. 224,270, 7–11–72, Cl. D56—2.

Metaframe Corp.: *See*—
Willinger, Allan H. 224,238.

Meth, Harry and S. Lake, to General Mills Fun Group, Inc. Three-dimensional turtle figure. 224,239, 7–11–72, Cl. D34—2.

Milani, Francesco, to Gretag Aktiengesellschaft. Photographic film notcher. 224,271, 7–11–72, Cl. D61—1.

Miller, Leon G., to Bud Radio, Inc. Housing for electronic equipment. 224,229, 7–11–72, Cl. D26—5.

Morris, Astrid: *See*—
Straub, Dorothy A., and Morris. 224,183.
Straub, Dorothy A., and Morris. 224,184.

Mr. Christmas Inc.: *See*—
Hermanson, Terry. 224,237.

Munn, David E., and R. Maddestra, to Damon Corp. Electrical measurement demonstrator or similar article. 224,223, 7–11–72, Cl. D25—1.

Nagel, Robert L., to R. E. Dietz Co. Warning lens. 224,258, 7–11–72, Cl. D48—32.

Notarianni, Dominic F. Novelty tree. 224,236, 7–11–72, Cl. D29—1.

Novak, Stanley M., Jr., to AMF Inc. Child's coaster vehicle. 224,255, 7–11–72, Cl. D34—15.

Nubia, Jesse L. Smoking appliance. 224,279, 7–11–72, Cl. D85—8.

Ocuin, Morton, to The Galistyn Co. Chafing dish for fondue or the like. 224,256, 7–11–72, Cl. D44—15.

Olinkraft, Inc.: *See*—
Graser, Earl J. 224,204.
Graser, Earl J. 224,205.

Omron Tateisi Electronics Co.: *See*—
Yamamoto, Mititaka, Yaida, and Maeda. 224,273.

Oneida Ltd.: *See*—
Manderfield, Ellen B. 224,261.
Manderfield, Ellen B. 224,264.
Manderfield, Ellen B. 224,265.
Manderfield, Ellen B. 224,267.
Perry, Frank R. 224,266.

Owens-Illinois, Inc.: *See*—
Kretz, Edward J. 224,200.
Schmersal, Larry J., and Wojcik. 224,231.

Patton, J. Lloyd: *See*—
Waddle, Thirl W., Wood, and Jackson. 224,242.

Perry, Frank R., to Oneida Ltd. Spoon or similar article. 224,266, 7–11–72, Cl. D54—12.

Peters, Howard, to U.S. Industries, Inc. Sewing machine cabinet. 224,197, 7–11–72, Cl. D6—181.

Pilinik, Burton F.: *See*—
Kinkel, Christian F., and Pilinik. 224,209.

Polaroid Corp.: *See*—
Conner, James M., Davison, Dietz, and Johnson. 224,272.

Price, Russell L. Snowmobile accessory carrier. 224,280, 7–11–72, Cl. D87—1.

Professional Sports Marketing, Inc.: *See*—
Hastings, Raymond I. 224,198.

Raimondi, Cesare A. Slide rule calculator. 224,259, 7–11–72, Cl. D52—6.

Reaves, Ransom. Bookcase. 224,196, 7–11–72, Cl. D6—148.

Record Chemical Co., Inc.: *See*—
Kucher, Joseph. 224,208.

Research Marketing, Inc.: *See*—
Ritter, Jack V. 224,219.

Rhodes, John G. L., to Telephone Manufacturing Co., Ltd. Telephone instrument base. 224,234, 7–11–72, Cl. D26—14.

Ritter, Jack V., to Research Marketing, Inc. Liner for a pick-up truck. 224,219, 7–11–72, Cl. D14—6.

SBI Inc.: *See*—
Baldwin, Gary L. 224,215.

Schenker, Eugenia. Lady's slipper or similar article. 224,185, 7–11–72, Cl. D2—283.

Schlau, Floyd E.: *See*—
Crain, Philip W., Schlau, and Tam. 224,250.

Schmersal, Larry J., and G. E. Wojcik, to Owens-Illinois, Inc. Combined light emitting gas discharge matrix display panel and connecting cables. 224,231, 7–11–72, Cl. D26—5.
Shoei Kakoh Co., Ltd.: *See*—
Kamata, Eitaro. 224,182.
Societe Grosfillex: *See*—
Grosfillex, Raymond. 224,192.
Grosfillex, Raymond. 224,193.
Squibb, E. R., & Sons, Inc.: *See*—
Brodsky, Louis, Zeitzer. 224,260.
Steelcase Inc.: *See*—
Leaver, Gardner. 224,188.
Standard Oil Co. (Indiana): *See*—
Cyr, Steven J., and Whelan. 224,206.
Cyr, Steve, and Whelan. 224,207.
Strässle, Alex. Chair with fluted seat and back rest surfaces. 224,190, 7–11–72, Cl. D6—65.
Strässle, Alex. Chair or similar article. 224,191, 7–11–72, Cl. D6—66.
Straub, Dorothy A., and A. Morris. Boot. 224,183, 7–11–72, Cl. D2—273.
Straub, Dorothy A., and A. Morris. Boot. 224,184, 7–11–72, Cl. D2—273.
Sunbeam Corp.: *See*—
Mango, Joseph R. 224,224.
Mango, Joseph R. 224,226.
Mango, Joseph R. 224,227.
Switzer, William D., Jr. Harmonica. 224,268, 7–11–72, Cl. D56—1.
Telephone Manufacturing Co. Ltd.: *See*—
Rhodes, John G. L. 224,234.
Transidyne General Corp.: *See*—
Vanden Broek, Jan A. 224,278.
Tytel, Bernard, to Award International, Inc. Inflatable wading pool. 224,241, 7–11–72, Cl. D34—5.
U.S. Industries, Inc.: *See*—
Peters, Howard. 224,197.
Vanden Broek, Jan A., to Transidyne General Corp. Electronic assembly for biological studies. 224,278, 7–11–72, Cl. D83—1.
Venaleck, Howard J. Face mask. 224,277, 7–11–72, Cl. D83—1.
Waddle Thirl W., J. D. Wood, V. L. Jackson; said Wood and said Jackson assors. to J. Lloyd Patton. Pitching game target. 224,242, 7–11–72, Cl. D34—5.
Whelan, Mark W.: *See*—
Cyr, Steven J., and Whelan. 224,206.
Cyr, Steve, and Whelan. 224,207.
Willinger, Allan H., to Metaframe Corp. Aquarium aerator. 224,238, 7–11–72, Cl. D30—12.
Wojcik, Gerald E.: *See*—
Schmersal, Larry J. Wojcik. 224,231.
Wood, Jackie D.: *See*—
Waddle, Thirl W., Wood, and Jackson. 224,242.
Wormser, Robert S., to Game Time, Inc. Shelter. 224,213, 7–11–72, Cl. D13—1.
Wormser, Robert S., to Game Time, Inc. Camping shelter. 224,214, 7–11–72, Cl. D13—1.
Yaida, Koichi: *See*—
Yamamoto, Mititaka, Yaida, and Maeda. 224,273.
Yamamoto, Mititaka, K. Yaida, and H. Maeda, to Omron Tateisi Electronics Co. Calculating machine. 224,273, 7–11–72, Cl. D64—11.
Yurdin, Carl, to Harman-Kardon, Inc. Phonograph. 224,262, 7–11–72, Cl. D56—4.
Yurdin, Carl, to Harman-Kardon, Inc. Combined radio-phonograph and tape player or similar article. 224,263, 7–11–72, Cl. D56—4.
Zakarin, Melvin V. Sash. 224,186, 7–11–72, Cl. D2—385.
Zeitzer, Bruce: *See*—
Brodsky, Louis, and Zeitzer. 224,260.

CLASSIFICATION OF PATENTS

ISSUED JULY 11, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2.1R	3,675,244
67	3,675,245
115	3,675,246
224R	3,675,247

CLASS 4

1	3,675,248
57P	3,675,249
111	3,675,250
151	3,675,251
172.17	3,675,252
172.19	3,675,253
231	3,675,254

CLASS 5

82	3,675,255
120	3,675,256

CLASS 8

10	3,676,049
41B	3,676,050
65	3,676,051
115.6	3,676,052
116	3,676,053
116.2	3,676,054
120	3,676,055
	3,676,056
128	3,676,057

CLASS 9

14	3,675,257
34	3,675,258
310G	3,675,259

CLASS 12

12	3,675,260

CLASS 13

	3,676,564

CLASS 15

1.7	3,675,261
4	3,675,262
76	3,675,263
104.94	3,675,264
193	3,675,265
340	3,675,266
	3,675,267
350	3,675,268

CLASS 16

18A	3,675,269
53	3,675,270
170	3,675,271

CLASS 17

52	3,675,272
61	3,675,273

CLASS 21

54R	3,676,058

CLASS 23

2	3,676,059
88	3,676,061
	3,676,062
113	3,676,063
129	3,676,064
160	3,676,065
198	3,676,066
204R	3,676,067
209.1	3,676,068
	3,676,069
209.4	3,676,070
212R	3,676,071
232R	3,676,072
	3,676,073
253R	3,676,080
259.1	3,676,074
277R	3,676,060
285	3,676,075
292	3,676,076
296	3,676,077
299	3,676,078
327	3,676,081
345	3,676,079
367	3,676,082

CLASS 24

49S	3,675,277
67R	3,675,274
73SA	3,675,283
81HS	3,675,275
130	3,675,276
201A	3,675,499
202	3,675,279
221K	3,675,280
230SL	3,675,282
230	3,675,281
249DP	3,675,278
265B	3,675,284

CLASS 28

1CL	3,675,285
1.7	3,675,286

CLASS 29

25.13	3,675,287
25.41	3,675,288
91	3,675,289
96	3,675,290
97	3,675,291
148.4C	3,675,292
150	3,675,293
156.8R	3,675,294
177	3,675,295
182	3,676,083
182.5	3,676,084
194	3,676,085
195G	3,676,087
195	3,676,086
199	3,676,088
200P	3,675,296
200R	3,675,297
203B	3,675,299
203V	3,675,298
205C	3,675,300
208B	3,675,301
211	3,675,302
237	3,675,303
238	3,675,304
401	3,675,309
422	3,675,308
427	3,675,315
439	3,675,305
487	3,675,306
492	3,675,310
495	3,675,307
498	3,675,311
526	3,675,312
571	3,675,313
576	3,675,316
578	3,675,314
620	3,675,317
624	3,675,318
625	3,675,319
630D	3,675,320

CLASS 30

4R	3,675,321
32	3,675,322
	3,675,323
43.6	3,675,324
90	3,675,325

CLASS 32

5	3,675,326
6	3,675,327
15	3,675,328
	3,675,329
59	3,675,330

CLASS 33

1SA	3,675,332
1M	3,675,331
23C	3,675,333
138	3,675,334
168R	3,675,335

CLASS 34

9.5	3,675,336
41	3,675,337
239	3,675,338

CLASS 35

6	3,675,339
9B	3,675,341
9D	3,675,340
10	3,675,342
	3,675,343
10.4	3,676,565
12N	3,675,344
69	3,675,345

CLASS 36

11.5	3,675,346

CLASS 37

69	3,675,348
117.5	3,675,349
129	3,675,347
142A	3,675,350

CLASS 38

77.83	3,675,351

CLASS 40

31	3,675,352
51	3,675,353
63A	3,675,354
125R	3,675,355
145	3,675,356
300	3,675,357

CLASS 43

42.09	3,675,358
53.5	3,675,359
129	3,675,360

CLASS 44

62	3,676,089
72	3,676,090

CLASS 46

1H	3,675,361
13	3,675,362
15	3,675,363
58	3,675,364
239	3,675,365
244A	3,675,366

CLASS 47

1.3	3,675,367
34	3,675,368

CLASS 48

190	3,676,091

CLASS 49

20	3,675,369
253	3,675,370
352	3,675,371

CLASS 51

5	3,675,372
9	3,675,373
12	3,675,374
281R	3,675,375
295	3,676,092

CLASS 52

1	3,675,376
2	3,675,377
65	3,675,378
79	3,675,379
80	3,675,380
166	3,675,381
214	3,675,382
222	3,675,383
250	3,675,384
741	3,675,385

CLASS 53

63	3,675,386
157	3,675,387
183	3,675,389
187	3,675,388
282	3,675,390

CLASS 55

16	3,675,391
25	3,675,392
96	3,675,393
164	3,675,395
225	3,675,396
227	3,675,397
316	3,675,398
357	3,675,399
385	3,675,400
394	3,675,401
496	3,675,402
518	3,675,394
524	3,675,403

CLASS 56

209	3,675,404
328R	3,675,405
330	3,675,406

CLASS 57

22	3,675,407
140BY	3,675,408
144	3,675,409

CLASS 58

35R	3,675,410
42.5	3,675,411
58	3,675,412
74	3,675,413
88W	3,675,414
150	3,675,415

CLASS 60

36	3,675,416
39.14	3,675,417
39.18B	3,675,426
39.31	3,675,418
39.36	3,675,419
51	3,675,420
53R	3,675,421
54.5P	3,675,422
107	3,675,423
221	3,675,424
258	3,675,425

CLASS 61

.5	3,675,427
35	3,675,428
46	3,675,429
	3,675,430
	3,675,431
72.1	3,675,432
84	3,675,433

CLASS 62

23	3,675,434
26	3,675,435
58	3,675,436
137	3,675,437
156	3,675,438
223	3,675,439
256	3,675,440
278	3,675,441
285	3,675,442
343	3,675,443

CLASS 64

28R	3,675,444

CLASS 65

1	3,676,093
3	3,676,094
	3,676,095
	3,676,096
33	3,676,097
106	3,676,098
162	3,676,099

CLASS 66

50B	3,675,445
132T	3,675,446
192	3,675,447

CLASS 68

208	3,675,448
222	3,675,449

CLASS 69

1	3,675,450

CLASS 71

34	3,676,101
37	3,676,100
127	3,676,102

CLASS 72

20	3,675,451
53	3,675,452
58	3,675,453
108	3,675,454
238	3,675,455
239	3,675,456
265	3,675,457
294	3,675,458
352	3,675,459
399	3,675,460
406	3,675,461
428	3,675,462
448	3,675,463

CLASS 73

1C	3,675,464
15B	3,675,465
23.1	3,675,466
40.7	3,675,468
	3,675,469
59	3,675,470
67	3,675,471
67.5R	3,675,472
70.1	3,675,473
88E	3,675,474
89	3,675,475
144	3,675,482
150	3,675,476
	3,675,477
152	3,675,478
161	3,675,479
199	3,675,480
209	3,675,481
327	3,675,483
351	3,675,467
358	3,675,501
362AR	3,675,484
382	3,675,485
401	3,675,486
414	3,675,487
421R	3,675,488
421.5R	3,675,489
425	3,675,490
425.4R	3,675,491
425.6	3,675,492
432R	3,675,493
	3,675,494
466	3,675,495

CLASS 74

10.6	3,675,496
15.4	3,675,497
55	3,675,498
230.17E	3,675,500
369	3,675,502
436	3,675,503
483PB	3,675,504
552	3,675,505
572	3,675,506
687	3,675,507
745	3,675,508
793	3,675,509
801	3,675,510
866	3,675,511
869	3,675,512

CLASS 75

.5BA	3,676,103
3	3,676,104
68R	3,676,105
101R	3,676,106
109	3,676,107
123B	3,676,108
124	3,676,109
134	3,676,110
142	3,676,111
146	3,676,113
172	3,676,114
173R	3,676,112
178AM	3,676,115

CLASS 81

57.11	3,675,514
121	3,675,515
	3,675,516

CLASS 82

1B	3,675,518
2B	3,675,517
36A	3,675,519
101	3,675,521

CLASS 83

2	3,675,520
14	3,675,522
167	3,675,523
459	3,675,524
629	3,675,525
676	3,675,526

CLASS 84

180	3,675,527
418	3,675,528
455	3,675,529

CLASS 85

33	3,675,530
70	3,675,531

CLASS 87

1	3,675,532

CLASS 89

1B	3,675,533
185	3,675,534

CLASS 90

11A	3,676,120
11R	3,675,535
13.05	3,675,536
13.9	3,675,537

CLASS 91

1	3,675,538
477	3,675,539

CLASS 92

98	3,675,540

CLASS 93

1C	3,675,541
35R	3,675,542

CLASS 94

39	3,675,543
45A	3,675,544
46	3,675,545
50R	3,675,546

CLASS 95

1.1	3,675,549
4.5R	3,675,560
10CT	3,675,547
	3,675,548
10C	3,675,550
11L	3,675,565
11R	3,675,551
11V	3,675,552
18P	3,675,553
	3,675,554
31FL	3,675,556
31FM	3,675,555
42	3,675,557
	3,675,558
44C	3,675,559
53E	3,675,561
64R	3,675,562
89R	3,675,563
90	3,675,564

CLASS 96

1R	3,676,117
1.3	3,676,116
1.5	3,676,118
1.7	3,676,119
13	3,676,121
23	3,676,122
29D	3,676,124
29	3,676,123
33	3,676,125
36.1	3,676,127
36.2	3,676,126
36.4	3,676,128
38.3	3,676,129
40	3,676,130
48	3,676,131
49	3,676,132
	3,676,133
	3,676,134
54	3,676,135
56	3,676,136
56.5	3,676,137
75	3,676,138
82	3,676,139
91	3,676,140
100	3,676,141
	3,676,142
111	3,676,143
	3,676,144
115	3,676,145
	3,676,146
130	3,676,147

CLASS 98

2.07	3,675,566

CLASS 99

1	3,676,148
86	3,676,151
90R	3,676,150
94	3,676,152
107	3,676,153
124	3,676,154
139	3,676,155
140R	3,676,149
	3,676,156
144	3,676,157
166	3,676,158
174	3,676,159
257	3,675,567

CLASS 100

7	3,675,568
	3,675,569
26	Re.27,427
90	3,675,570

CLASS 101

115	3,675,571
401.1	3,675,572
415.1	3,675,573

CLASS 102

24HC	3,675,575

24 3,675,574
44 3,675,576
67 3,675,577
70.2 3,675,578
3,675,579

CLASS 104

9 3,675,580
12 3,675,581
23FS 3,675,583
23R 3,675,582
28 3,675,584
148LM 3,675,585
149 3,675,586
172BT 3,675,587
173 3,675,588
247 3,675,589

CLASS 105

240 3,675,590
253 3,675,591
368R 3,675,592
447 3,675,593

CLASS 106

38.9 3,676,160
55 3,676,161
58 3,676,162
3,676,163
77 3,676,164
117 3,676,165
241 3,676,166
300 3,676,167
307 3,676,168

CLASS 108

2 3,675,594
51 3,675,595
3,675,596
136 3,675,597
144 3,675,598

CLASS 109

11 3,675,599

CLASS 110

8R 3,675,600

CLASS 111

51 3,675,601

CLASS 112

121.29 3,675,602
168 3,675,603
262 3,675,604

CLASS 114

16R 3,675,607
61 3,675,605
65R 3,675,606
210 3,675,608
230 3,675,609
3,675,610

CLASS 115

12R 3,675,611
3,675,612

CLASS 116

63P 3,675,613
118 3,675,614
121 3,675,620
173 3,675,615
3,675,616

CLASS 117

3 3,676,169
16 3,676,170
17 3,676,171
21 3,676,172
3,676,173
26 3,676,174
33.5CM 3,676,177
33.5L 3,676,176
33.5T 3,676,175
34 3,676,178
46CG 3,676,179
47A 3,676,180
3,676,181
60 3,676,182
64R 3,676,183
68 3,676,184
68.5 3,676,185
69 3,676,186
70A 3,676,187
71R 3,676,188
76P 3,676,189
76 3,676,190
77 3,676,191
93.31 3,676,192
3,676,195
93.4R 3,676,194
94 3,676,193
96 3,676,196
105.5 3,676,197
3,676,198
109 3,676,199
121 3,676,200
122H 3,676,201
122P 3,676,202
123D 3,676,203
125 3,676,204
139.5C 3,676,205
140A 3,676,206
143A 3,676,207
161UC 3,676,209
161ZB 3,676,208
201 3,676,210
212 3,676,211
3,676,212
3,676,213
217 3,676,214
230 3,676,215
237 3,676,216
239 3,676,217

CLASS 118

2 3,675,617
31.5 3,675,618
48 3,675,619
122 3,675,621
421 3,675,622
423 3,675,623
503 3,675,624

CLASS 119

1 3,675,625
4 3,675,626
72 3,675,627

CLASS 122

6R 3,675,628
235R 3,675,629

CLASS 123

70R 3,675,630
90.52 3,675,631
97B 3,675,632
119A 3,675,633
136 3,675,634
148E 3,675,635
3,675,636

CLASS 126

263 3,675,637
339 3,675,638

CLASS 128

1 3,675,639
3,675,642
2.05R 3,675,640
2.06F 3,675,643
6 3,675,641
58 3,675,644
62A 3,675,645
75 3,675,646
130 3,675,647
3,675,648
142R 3,675,649
142.7 3,675,650
215 3,675,651
269 3,675,652
278 3,675,653
287 3,675,654
303.14 3,675,655
325 3,675,656
327 3,675,657
349BV 3,675,658
395 3,675,659

CLASS 130

27JT 3,675,660

CLASS 131

212R 3,675,661
235R 3,675,662

CLASS 132

40 3,675,663

CLASS 133

6 3,675,664

CLASS 134

1 3,676,218
3 3,676,219
12 Re.27,432
46 3,675,665
105 3,675,666

CLASS 135

1R 3,675,667

CLASS 136

86 3,676,220
111 3,676,221
121 3,676,222

CLASS 137

1 3,675,668
3,675,669
3,675,670
13 3,675,671
81.5 3,675,672
187 3,675,673
244 3,675,674
318 Re.27,431
368 3,675,675
375 3,675,677
501 3,675,676
505.22 3,675,678
587 3,675,679
615 3,675,680
625.17 3,675,682
625.3 3,675,681
637.4 3,675,683

CLASS 138

30 3,675,684
89 3,675,685

CLASS 139

1 3,675,686
127P 3,675,687

CLASS 140

93D 3,675,688

CLASS 143

32N 3,675,689
46F 3,675,690

CLASS 144

3D 3,675,691
241 3,675,693
317 3,675,692

CLASS 145

50A 3,675,694

CLASS 146

28A 3,675,695
225 3,675,696
253 3,675,697

CLASS 148

6.15R 3,676,223
6.15Z 3,676,224
12.7 3,676,225
32 3,676,226
111 3,676,227
171 3,676,228
186 3,676,229
187 3,676,230
188 3,676,231

CLASS 149

6 3,676,232
19 3,676,233
38 3,676,234
39 3,676,235
41 3,676,236

CLASS 150

1.5R 3,675,698

CLASS 152

153 3,675,699
209 3,675,700
225 3,675,701
354 3,675,702
361 3,675,703
3,675,704

CLASS 156

2 3,676,237
3 3,676,238
16F 3,676,239
17 3,676,240
62 3,676,241
62.4 3,676,242
167 3,676,243
181 3,676,244
3,676,245
188 3,676,246
205 3,676,247
235 3,676,248
244 3,676,249
249 3,676,250
252 3,676,251
277 3,676,252
279 3,676,253
286 3,676,254
306 3,676,255
3,676,256
351 3,676,257
392 3,676,258
395 3,676,259
396 3,676,260
401 3,676,261
417 3,676,262
462 3,676,263
470 3,676,264
500 3,676,265
521 3,676,266
523 3,676,267
548 3,676,268
3,676,269
553 3,676,270
567 3,676,271
574 3,676,272

CLASS 157

1.1 3,675,705
13 3,675,706

CLASS 159

20 3,675,707

CLASS 161

3 3,676,273
4 3,676,274
9 3,676,277
14 3,676,275
17 3,676,276
43 3,676,278
44 3,676,279
67 3,676,280
85 3,676,281
87 3,676,282
88 3,676,283
93 3,676,284
3,676,285
109 3,676,286
140 3,676,287
158 3,676,288
189 3,676,289
3,676,290
195 3,676,291
196 3,676,292
206 3,676,293

CLASS 162

192 3,676,294
198 3,676,295

CLASS 164

35 3,675,708
335 3,675,709

CLASS 165

1 3,675,710
3 3,675,712
32 3,675,711

CLASS 166

.6 3,675,713
173 Re.27,425
224 3,675,714
256 3,675,715
275 3,675,716
278 3,675,717
297 3,675,718
3,675,719
314 3,675,720

CLASS 169

24 3,675,721
30 3,675,722

CLASS 172

100 3,675,723
116 3,675,724
245 3,675,725

CLASS 173

93 3,675,726

CLASS 174

36 3,676,566
37 3,676,567
49 3,676,568
52S 3,676,569
61 3,676,570
65 3,676,571
69 3,676,572
75C 3,676,573
87 3,676,574
94R 3,676,575
113R 3,676,576
119R 3,676,577
128 3,676,578
138R 3,676,579

CLASS 175

26 3,675,727
57 3,675,728
228 3,675,729

CLASS 176

35 3,676,296
58 3,676,297

CLASS 178

5.1 3,676,580
5.4R 3,676,581
5.8AF 3,676,582
6.6TC 3,676,583
6.8 3,676,584
3,676,585
3,676,589
7.1 3,676,590
7.2 3,676,586
3,676,587
7.5D 3,676,588
3,676,591
7.6 3,676,592
66A 3,676,593

CLASS 179

1SA 3,676,596
1VL 3,676,594
1VS 3,676,595
6.3R 3,676,597
15BS 3,676,599
15FD 3,676,598
15.5ST 3,676,600
16E 3,676,601
17A 3,676,602
18AB 3,676,604
18BE 3,676,605
18BF 3,676,603
18BG 3,676,606
81R 3,676,608
84VF 3,675,513
90K 3,676,607
100.1R 3,676,609
100.2ZC 3,676,610
100.2E 3,676,612
107E 3,676,611
170T 3,676,613

CLASS 180

55 3,675,730
109 3,675,731

CLASS 181

36A 3,675,732
37 3,675,733
56 3,675,734

CLASS 182

113 3,675,736
129 3,675,735

CLASS 184

17 3,675,737
18 3,675,738

CLASS 187

1 3,675,739

CLASS 188

1C 3,675,746
26 3,675,740
3,675,741
72.5 3,675,742
3,675,743
73.6 3,675,744
134 3,675,745

CLASS 191

12.2 3,676,614

CLASS 192

48.2 3,675,747
51 3,675,748
56R 3,675,749
105BA 3,675,750
150 3,675,751

CLASS 193

5 3,675,752

CLASS 195

1.7 3,676,298
28R 3,676,299
29 3,676,300
3,676,301
80R 3,676,302
103.5R 3,676,303

CLASS 197

18 3,675,753

CLASS 198

20 3,675,754
33R 3,675,755
36 3,675,756
41 3,675,757
110 3,675,758
131 3,675,759
183 3,675,760
184 3,675,761
233 3,675,762

CLASS 200

1R 3,676,615
5R 3,676,616
44 3,676,617
77 3,676,618
81H 3,676,619
83S 3,676,620
144AP 3,676,621
3,676,622
146R 3,676,623
148B 3,676,624
153LA 3,676,625
159A 3,676,627
159R 3,676,626
166BC 3,676,628
166E 3,676,629
168K 3,676,630

CLASS 202

160 3,676,304
263 3,676,305

CLASS 203

8 3,676,306
20 3,676,307

CLASS 204

16 3,676,308
27 3,676,309
95 3,676,315
143M 3,676,310
159.14 3,676,311
181 3,676,312
3,676,313
3,676,314
3,676,316
192 3,676,317
3,676,320
193 3,676,318
195F 3,676,319
195R 3,676,321
206 3,676,322
244 3,676,323
284 3,676,324
288 3,676,325
296 3,676,326

CLASS 206

45.14 3,675,763
45.34 3,675,764
46FN 3,675,765
63.4 3,675,766
65S 3,675,767

CLASS 208

47 3,676,327
65 3,676,328
3,676,329
111 3,676,330
112 3,676,331
143 3,676,332
209 3,676,333

CLASS 209

4 3,675,768
73 3,675,769
97 3,675,770
166 3,675,773

CLASS 210

9 3,676,334
23 3,676,335
25 3,676,336
42 3,676,337
83 3,675,771
90 3,675,772
138 3,675,775
167 3,675,774
232 3,675,776
3,675,777
237 3,675,778
242 3,675,779
446 3,675,780

CLASS 211

11 3,675,781
22 3,675,784
50 3,675,782
71 3,675,783
119.1 3,675,785

CLASS 212

127 3,675,786

CLASS 213

153 3,675,787

CLASS 214

1QG 3,675,789
1Q 3,675,788
6BA 3,675,792
6DK 3,675,791
6B 3,675,793
6P 3,675,790
13 3,675,794
16.1CB 3,675,799
16.1CC 3,675,795
17C 3,675,796
35R 3,675,797
84 3,675,798
85.1 3,675,800
310 3,675,801
520 3,675,802
730 3,675,803

CLASS 215

9 3,675,804
42 3,675,805

CLASS 217

26.5 3,675,806

CLASS 219

56 3,676,631
58 3,676,632
69C 3,676,633
76 3,676,634
92 3,676,635
117R 3,676,636
3,676,637
121P 3,676,638
121R 3,676,639
130 3,676,640
200 3,676,641
301 3,676,642
432 3,676,643

CLASS 220

3.94 3,675,807
7 3,675,808
9LG 3,675,809
17 3,675,810
20 3,675,811
31S 3,675,812
36 3,675,813
64 Re.27,430
85R 3,675,814
97D 3,675,815

CLASS 221

13 3,675,816
95 3,675,817
224 3,675,818

CLASS 222

51 3,675,819
76 3,675,820
80 3,675,821
103 3,675,822
145 3,675,823
3,675,824
148 3,675,825
183 3,675,826
194 3,675,827
204 3,675,829
362 3,675,828
385 3,675,830
402.11 3,675,831
402.24 3,675,832

CLASS 224

29R 3,675,833
45S 3,675,835
45T 3,675,834

CLASS 226
113 3,675,836
187 3,675,837

CLASS 227
8 3,675,838
140 3,675,839

CLASS 228
4 3,675,840
25 3,675,841

CLASS 229
6R 3,675,842
54R 3,675,843
80 3,675,844

CLASS 232
35 3,675,845

CLASS 233
26 3,675,846

CLASS 235
30 3,675,847
61AA 3,675,848
61.11D 3,676,644
61.11E 3,676,645
61.12N 3,676,646
92PC 3,676,647
150.2 3,676,648
151.11 3,676,650
3,676,651
151.3 3,676,649
3,676,653
151.32 3,676,652
152 3,676,654
3,676,655
156 3,676,656
175 3,676,657
176 3,676,658
186 3,676,659
3,676,660
193 3,676,661

CLASS 239
124 3,675,849
254 3,675,850
318 3,675,851
422 3,675,852
464 3,675,853
490 3,675,854
597 3,675,855
654 3,675,856
668 3,675,857

CLASS 240
1.3 3,676,663
6.4W 3,676,664
10T 3,676,662
41.35R 3,676,667
41.5 3,676,665
3,676,666
103R 3,676,668

CLASS 241
5 3,675,858
20 3,675,859

CLASS 242
7.11 3,675,860
7.17 3,675,861
18R 3,675,862
43 3,675,863
47 3,675,864
3,675,865
55 3,675,866
55.19A 3,675,867
67.1 3,675,868
74 3,675,869
84.1A 3,675,870
118.3 3,675,871
174 3,675,872
192 3,675,873
3,675,874
198 3,675,876
199 3,675,875
209 3,675,877

CLASS 244
1SC 3,675,879
1SS 3,675,878
83R 3,675,880

CLASS 246
182R 3,676,669

CLASS 248
9 3,675,881
235 3,675,882
251 3,675,883
317 3,675,884
351 3,675,885
363 3,675,886
378 3,675,887

CLASS 249
57 3,675,888
82 3,675,889

CLASS 250
41.9SE 3,676,672
49.5TE 3,676,673
49.5A 3,676,670
49.5C 3,676,693
52 3,676,675
71R 3,676,671
71.5R 3,676,674
83R 3,676,676
83.3H 3,676,677
83.6FT 3,676,678
3,676,679
3,676,680
3,676,681
83.6 3,676,682
90 3,676,683
199 3,676,684
206 3,676,685
3,676,686
209 3,676,687
211R 3,676,688
219D 3,676,690
219 3,676,689
222R 3,676,691
231R 3,676,692

CLASS 251
3 3,675,890
117 3,675,891
121 3,675,892
152 3,675,893
163 3,675,894
315 3,675,895
321 3,675,896

CLASS 252
8.75 3,676,338
3,676,339
3,676,340
8.8 3,676,341
18 3,676,342
25 3,676,343
47.5 3,676,346
49.3 3,676,344
3,676,345
51.5R 3,676,347
54 3,676,348
54.6 3,676,349
62.1 3,676,350
63.5 3,676,351
99 3,676,352
136 3,676,353
147 3,676,354
153 3,676,355
192 3,676,356
259.5 3,676,357
301.2R 3,676,360
301.3R 3,676,359
301.4F 3,676,361
301.4P 3,676,358
309 3,676,362
316 3,676,363
413 3,676,364
422 3,676,365
448 3,676,366
451 3,676,367
454 3,676,369
455R 3,676,370
455Z 3,676,368
507 3,676,371
525 3,676,372
531 3,676,373
551 3,676,374

CLASS 254
78 3,675,897
134.3FT 3,675,898
168 3,675,899
172 3,675,900

CLASS 259
4 3,675,901
7 3,675,902
8 3,675,903
108 3,675,904

CLASS 260
2A 3,676,375
2.5AQ 3,676,379
2.5AV 3,676,376
2.5AW 3,676,380
2.5E 3,676,378
15 3,676,377
17.4R 3,676,381
18TN 3,676,382
22R 3,676,383
23EP 3,676,384
27 3,676,386
28 3,676,388
28.5B 3,676,387
29.4UA 3,676,389
31.8HR 3,676,390
32.8R 3,676,385
33.6UA 3,676,391
38 3,676,392
45.7P 3,676,393
45.9R 3,676,394
3,676,395
3,676,396
47CP 3,676,399
47EP 3,676,397
3,676,398
63CQ 3,676,401
75NC 3,676,402
75N 3,676,403
77.5CR 3,676,405
77.5R 3,676,407
78UA 3,676,404
78R 3,676,406
80.3E 3,676,408
80.78 3,676,409
80.81 3,676,410
82 3,676,412
82.1 3,676,411
87.5 3,676,413
88.2 3,676,414
3,676,415
3,676,418
94.3 3,676,416
94.9D 3,676,417
94.9F 3,676,419
185 3,676,420
205 3,676,421
211.5R 3,676,422
212 3,676,423
239DD 3,676,428
239HM 3,676,425
239E 3,676,424
239.1 3,676,427
3,676,429
239.3A 3,676,430
3,676,431
239.3T 3,676,432
239.55R 3,676,426
3,676,433
240TC 3,676,435
243C 3,676,434
3,676,437
243R 3,676,438
244R 3,676,439
248NS 3,676,440
249.8 3,676,441
250R 3,676,442
256.4C 3,676,443
287R 3,676,444
288R 3,676,445
294.8E 3,676,446
295AM 3,676,447
296D 3,676,448
302SD 3,676,449
302R 3,676,451
302S 3,676,450
307D 3,676,452
307R 3,676,453
309.5 3,676,454
3,676,455
3,676,456
326.14T 3,676,458
327C 3,676,459
333 3,676,460
343.2R 3,676,436
343.3 3,676,461
3,676,463
343.6 3,676,464
345.3 3,676,462
346.2M 3,676,465
349 3,676,466
397.3 3,676,467
403 3,676,468
408 3,676,469
410 3,676,470
410.5 3,676,471
410.9R 3,676,472
413 3,676,473
429R 3,676,474
439R 3,676,475
446 3,676,476
3,676,477
448.2N 3,676,478
455A 3,676,479
465D 3,676,480
465.9 3,676,481
471A 3,676,482
471 3,676,457
475N 3,676,483
475P 3,676,484
3,676,485
479C 3,676,486
489 3,676,487
524R 3,676,488
533R 3,676,489
534 3,676,490
546 3,676,491
559A 3,676,492
3,676,493
559T 3,676,494
563R 3,676,495
570D 3,676,497
570R 3,676,496
586R 3,676,498
593R 3,676,499
602 3,676,500
613B 3,676,501
613R 3,676,502
621H 3,676,503
631.5 3,676,504
3,676,505
652.5R 3,676,506
664 3,676,507
666PY 3,676,508
3,676,509
3,676,510
3,676,511
3,676,512
668D 3,676,513
668 3,676,514
671C 3,676,515
677A 3,676,516
679R 3,676,517
680R 3,676,518
683D 3,676,520
683 3,676,519
683.1 3,676,521
683.15D 3,676,523
683.65 3,676,522
831 Re.27,426
837R 3,676,524
857TW 3,676,525
857L 3,676,400
876R 3,676,526
3,676,527
878R 3,676,528
887 3,676,529
949 3,676,530
953 3,676,531
970 3,676,532

CLASS 261
23A 3,675,906
39 3,675,907

CLASS 263
2R 3,675,905

CLASS 264
3C 3,676,533
9 3,676,534
29 3,676,535
33 3,676,536
48 3,676,537
75 3,676,538
175 3,676,539
177F 3,676,540
234 3,676,541
244 3,676,542
296 3,676,543
329 3,676,544

CLASS 266
6S 3,675,908
13 3,675,909
24 3,675,910
38 3,675,911

CLASS 267
166 3,675,912

CLASS 269
51 3,675,913
55 3,675,914
58 3,675,915
69 3,675,916

CLASS 271
26 3,675,917
44 3,675,918

CLASS 272
54 3,675,919

CLASS 273
1R 3,675,920
1.5A 3,675,921
55R 3,675,922
80.2 3,675,923
101 3,675,924
101.2 3,675,925
105.4 3,675,926
119A 3,675,927
128R 3,675,928
183A 3,675,929

CLASS 274
11R 3,675,930
3,675,931
23A 3,675,932

CLASS 277
9 3,675,933
12 3,675,934
27 3,675,935
94 3,675,936

CLASS 280
11.35C 3,675,938
11.35T 3,675,937
28 3,675,939
47.26 3,675,940
124R 3,675,941
150AB 3,675,942
154.5R 3,675,943
278 3,675,944
411C 3,675,945
440 3,675,946
500 3,675,947

CLASS 283
6 3,675,948

CLASS 285
39 3,675,951
45 3,675,950
302 3,675,952
354 3,675,949

CLASS 287
12 3,675,953
20.92W 3,675,954
20.927 3,675,955
53R 3,675,956
189.36A 3,675,957
189.36D 3,675,958

CLASS 292
70 3,675,959

CLASS 294
67R 3,675,961
81SF 3,675,960
99R 3,675,962
104 3,675,963

CLASS 296
1A 3,675,964
23 3,675,965
28C 3,675,966
137B 3,675,967

CLASS 297
162 3,675,968
194 3,675,969
452 3,675,970

CLASS 299
34 3,675,971
41 3,675,972
88 3,675,973

CLASS 301
13SM 3,675,974

CLASS 302
52 3,675,975

CLASS 307
10R 3,676,694
88.3 3,676,695
119 3,676,696
205 3,676,700
221R 3,676,701
228 3,676,697
3,676,698
234 3,676,699
235 3,676,702
3,676,703
3,676,704
251 3,676,705
252B 3,676,706
260 3,676,707
263 3,676,708
279 3,676,709
289 3,676,710
291 3,676,712
293 3,676,711
300 3,676,713
303 3,676,714
304 3,676,715
3,676,717
306 3,676,718
308 3,676,716

CLASS 308
3 3,675,976
9 3,675,977
214 3,675,978
230 3,675,979
238 3,675,980

CLASS 310
8.1 3,676,720
8.2 3,676,724
8.3 3,676,721
8.6 3,676,722
24 3,676,719
68B 3,676,723
89 3,676,725

CLASS 312
257 3,675,981
278 3,675,982

CLASS 313
65R 3,676,726
66 3,676,727
109 3,676,728
3,676,729
318 3,676,730
346DC 3,676,731

CLASS 315
10 3,676,732
27GD 3,676,733
200 3,676,734
207 3,676,735
241R 3,676,736

CLASS 317
18C 3,676,739
18D 3,676,737
18R 3,676,738
22 3,676,740
33R 3,676,742
61 3,676,743
99 3,676,744
100 3,676,745
101CC 3,676,746
101CM 3,676,748
101 3,676,747
103 3,676,749
112 3,676,750
137 3,676,751
230 3,676,752
3,676,753
3,676,754
234R 3,676,741
235R 3,676,755
235 3,676,756
242 3,676,757

CLASS 318
128 3,676,758
446 3,676,759
571 3,676,760
574 3,676,761

CLASS 321
8R 3,676,762
45C 3,676,763

CLASS 322
51 3,676,764
58 3,676,765

CLASS 323
6 3,676,766
22T 3,676,768

CLASS 324
29.5 3,676,770
32 3,676,769
33 3,676,771
41 3,676,772
3,676,773
57 3,676,774
64 3,676,775
72.5 3,676,776
73R 3,676,777
158D 3,676,767

CLASS 325
4 3,676,778
115 3,676,779
155 3,676,780
455 3,676,781

CLASS 328
1 3,676,782
117 3,676,783
181 3,676,784

CLASS 329
103 3,676,785
122 3,676,786

CLASS 330
4 3,676,787
5.5 3,676,788
29 3,676,789
30D 3,676,790
43 3,676,791
52 3,676,792

CLASS 331
1A 3,676,793
11 3,676,794
94.5 3,676,795
3,676,796
3,676,797
3,676,798
3,676,799
111 3,676,800
116R Re.27,428
3,676,801

CLASS 332
9R 3,676,802

CLASS 333
1.1 3,676,803
18 3,676,804
72 3,676,805
3,676,806
81A 3,676,807
83 3,676,808
98R 3,676,809

CLASS 335
159 3,676,810
205 3,676,811
3,676,812

CLASS 336
189 3,676,813
205 3,676,814

CLASS 337
134 3,676,816
140 3,676,815
347 3,676,817

CLASS 338
2 3,676,818
32H 3,676,828
32R 3,676,819
34 3,676,820
41 3,676,821
132 3,676,822
139 3,676,823
162 3,676,824
181 3,676,825
183 3,676,826
3,676,827

CLASS 339
21R 3,676,830
33 3,676,829
49R 3,676,833
59L 3,676,834
73 3,676,835
74R 3,676,831
75M 3,676,832

97R 3,676,836
103R 3,676,837
198 Re.27,429
217R 3,676,838

CLASS 340

6R 3,676,839
12 3,676,840
15.5CC 3,676,841
15.5B 3,676,842
27R 3,676,843
71 3,676,844
87 3,676,845
146.1BA 3,676,846
146.3AC 3,676,847
3,676,848
149R 3,676,849
154 3,676,850
172.5 3,676,851
3,676,852
3,676,853
3,676,854
3,676,855
3,676,856
3,676,857
3,676,858
3,676,859
3,676,860
3,676,861
3,676,862
173CA 3,676,863
173LM 3,676,864
173LT 3,676,866
173RC 3,676,865
174QA 3,676,869
174TF 3,676,870
3,676,871
3,676,872
3,676,873
174YC 3,676,867
174.1C 3,676,868
174.1E 3,676,874
183 3,676,875
188 3,676,876
227R 3,676,877
408 3,676,878

CLASS 350

3.5 3,675,983
96R 3,675,984
157 3,675,985
3,675,986
160R 3,675,989
160 3,675,987
3,675,988
311 3,675,990

CLASS 351

41 3,675,991

CLASS 352

72 3,675,992
92 3,675,993
163 3,675,994
173 3,675,995
194 3,675,996

CLASS 353

28 3,675,997
101 3,675,998

CLASS 355

8 3,675,999
52 3,676,000
132 3,676,001
133 3,676,002

CLASS 356

5 3,676,003
87 3,676,004
97 3,676,005
109 3,676,006
184 3,676,007
196 3,676,008
199 3,676,009

CLASS 401

188 3,676,010

CLASS 415

111 3,676,011
119 3,676,012
128 3,676,013
200 3,676,014
202 3,676,015

CLASS 416

157 3,676,016

CLASS 417

34 3,676,017
72 3,676,018
121 3,676,019
222 3,676,020
253 3,676,023
299 3,676,021
372 3,676,024
392 3,676,022
423 3,676,025
560 3,676,026

CLASS 418

71 3,676,027

CLASS 424

44 3,676,549
71 3,676,546
3,676,550
88 3,676,547
92 3,676,548
103 3,676,551
110 3,676,552
128 3,676,553
198 3,676,554
220 3,676,555
260 3,676,557
266 3,676,556
273 3,676,545
274 3,676,558
275 3,676,559
285 3,676,560
300 3,676,561
320 3,676,562
366 3,676,563

CLASS 425

38 3,676,028
67 3,676,029
78 3,676,030
111 3,676,031
140 3,676,032
174 3,676,033
203 3,676,035
208 3,676,034
209 3,676,036
435 3,676,037
464 3,676,038
466 3,676,039
470 3,676,040

CLASS 431

47 3,676,041
66 3,676,042
93 3,676,043
95 3,676,044
3,676,045
3,676,046
255 3,676,047
353 3,676,048

CLASSIFICATION OF DESIGNS

D 2— 232 224,182
273 224,183
224,184
283 224,185
385 224,186
D 4— 25 224,187
D 6— 20 224,188
224,189
65 224,190
66 224,191
70 224,192
224,193
138 224,194
144 224,195
148 224,196
181 224,197
184 224,198
198 224,199
D 9— 41 224,200
42 224,201
44 224,202
131 224,203
176 224,204
185 224,206
224,207
242 224,208
255 224,209
284 224,210
D09— 176 224,205
D13— 1 224,211
224,212
224,213
224,214
224,215
224,216
224,217
224,218
D14— 6 224,219
14 224,220
30 224,221
D23— 28 224,225
48 224,222
122 224,224
224,226
224,227
D25— 1 224,223
D26— 5 224,229
224,230
224,231
13 224,228
224,232
14 224,233
224,234
224,235
D29— 1 224,236
224,237
D30— 12 224,238
D34— 2 224,239
4 224,240
5 224,241
224,242
224,243
224,244
224,245
224,246
224,247
15 224,248
224,249
224,250
224,251
224,252
224,253
224,254
224,255
D44— 224,256
D45— 7 224,257
D48— 32 224,258
D52— 1 224,260
6 224,259
D54— 12 224,261
224,264
224,265
224,266
224,267
D56— 1 224,268
224,269
2 224,270
4 224,262
224,263
D61— 1 224,271
224,272
D64— 11 224,273
12 224,274
D71— 1 224,275
D72— 224,276
D83— 224,277
224,278
D85— 8 224,279
D87— 1 224,280

CLASSIFICATION OF PLANTS

P. — 19 3,234
P. — 23 3,235
P. — 78 3,231
P. — 82 3,232
P. — 3,233

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,675,369
3,675,376
3,675,493
3,675,526
3,675,586
3,675,659
3,675,813
3,675,956
3,676,017
3,676,019
3,676,101
3,676,335
3,676,758
4 : 3,675,252
3,675,428
3,675,524
3,675,830
3,675,885
3,675,942
3,676,700
3,676,712
3,676,801
3,676,818
3,676,858
3,676,861
3,676,873
6 : Re.27,426
3,675,257
3,675,261
3,675,262
3,675,273
3,675,275
3,675,282
3,675,301
3,675,306
3,675,311
3,675,325
3,675,333
3,675,351
3,675,357
3,675,358
3,675,360
3,675,361
3,675,362
3,675,365
3,675,378
3,675,394
3,675,401
3,675,425
3,675,435
3,675,471
3,675,501
3,675,514
3,675,519
3,675,522
3,675,538
3,675,543
3,675,546
3,675,553
3,675,570
3,675,576
3,675,582
3,675,624
3,675,630
3,675,643
3,675,647
3,675,648
3,675,650
3,675,652
3,675,667
3,675,674
3,675,682
3,675,690
3,675,694
3,675,695
3,675,710
3,675,713
3,675,714
3,675,729
3,675,751
3,675,763
3,675,768
3,675,773
3,675,774
3,675,785
3,675,798
3,675,801
3,675,805
3,675,815
3,675,833
3,675,882
3,675,883
3,675,890
3,675,895
3,675,900
3,675,925
3,675,930
3,675,965
3,675,969
3,676,010
3,676,069
3,676,073
3,676,077
3,676,090
3,676,157
3,676,179
3,676,188
3,676,208
3,676,210
3,676,216
3,676,218
3,676,221
3,676,230
3,676,232
3,676,246
3,676,276
3,676,281
3,676,315
3,676,317
3,676,372
3,676,447
3,676,522
3,676,523
3,676,538
3,676,587
3,676,592
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U.S. GOVERNMENT PRINTING OFFICE: 0—1972

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